2-189 REV. 4/81

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898

POLYMER PRODUCTS DEPARTMENT

August 21, 1984

Mr. L. James Newman
Chemical Fabrics Corporation
P. O. Box 476
North Bennington, VT 05257

Dear Jim:

Enclosed is Paul Jann's report on his odor survey conducted on June 19, 20 and 21, 1984. Included are all measurement data, community impact modeling results and resultant recommendations to achieving reduced odor intensity level.

It appears to be a complete and well illustrated working document. We hope it will be useful to at least reducing the neighborhood complaints.

Sincerely,

Jerry/lam
T. Jerry Linton
Accounts Manager

TJL:mbb

Enclosure

cc: W. C. Cook

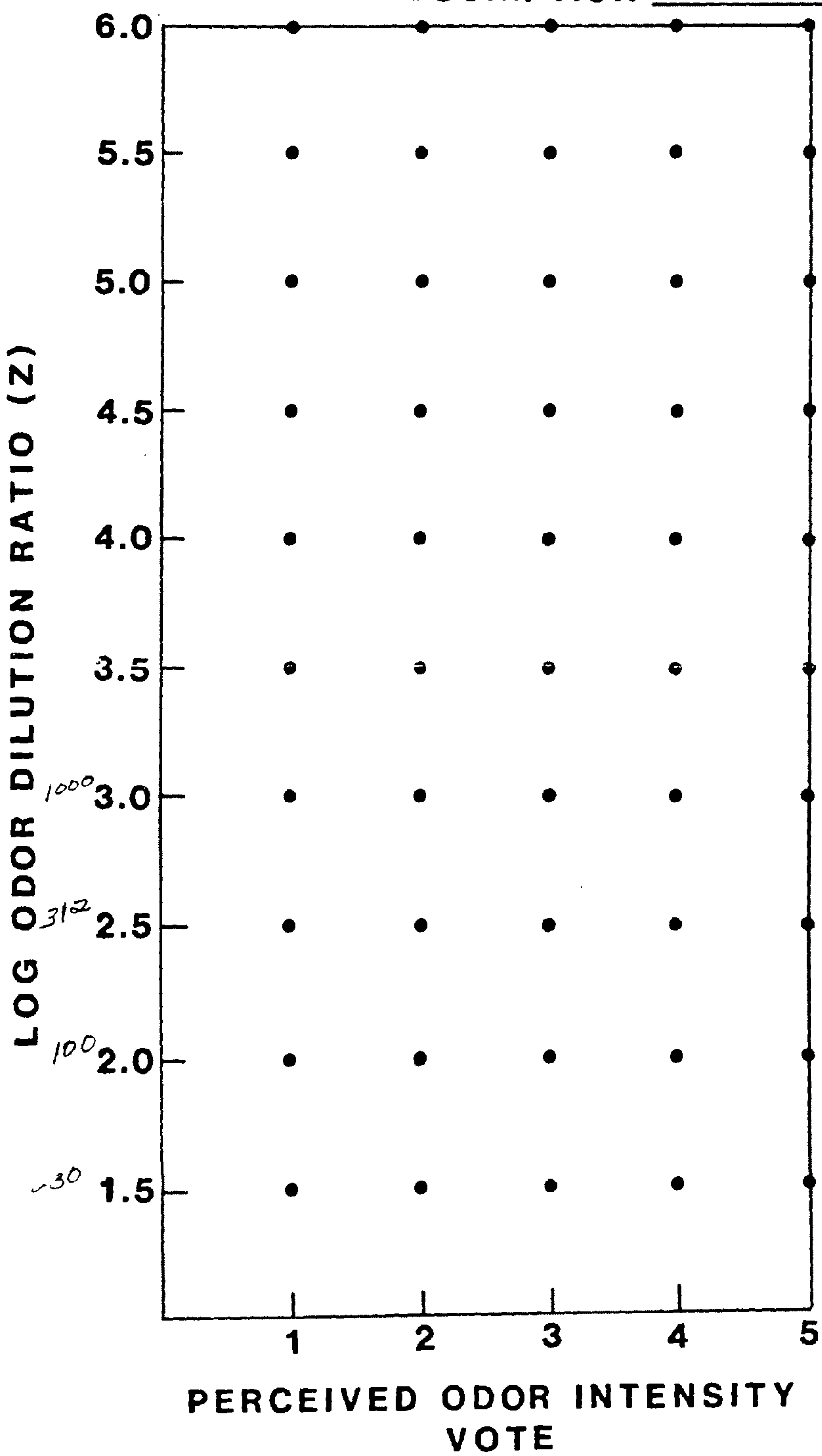
Exhibit 016

TEST ______________________________

PLANT ______________________________

SOURCE
DESCRIPTION ______________________________

____



PANEL
MEMBERS

A ______________________________

B ______________________________

C ______________________________

D ______________________________

E ______________________________

DU PONT
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E. I. DU PONT DE NEMOURS & COMPANY
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WILMINGTON, DELAWARE 19898

ENGINEERING DEPARTMENT
LOUVIERS BUILDING

CC: M. W. Westley - PPD - CR TSL
J. Linton - PPD - Concord ~~Plaza~~
F. H. Fuller - ESD - L-1351*
E. N. Helmers - ESD - L-1352*
I. C. 13 - AQ&HE

August 3, 1984

K. W. LAU (2)
POLYMER PRODUCTS DEPARTMENT
CHESTNUT RUN

POLYMER PRODUCTS - CHESTNUT RUN TSL LAB
AIR QUALITY
CUSTOMER (CHEM FAB) ODOR PROBLEM - PHASE I REPORT

Reference: Letter P. R. Jann to M. W. Wesley - Site Visit Report - May 24, 1984

Summary

An odor survey was performed for Chem Fab, North Bennington, Vermont, on June 19, 20, and 21. The testing included: odor measurements for dilutions to threshold, total unburned organics, and stack temperature and flow data. The odor strength (Z_2) of each stack and the fugitive odor from the building's ridgevent were then modeled using several computerized building downwash models to predict community odor impact. The modeling was also used to verify proposed recommendations to alleviate the problem. Based on the results, the ridgevent was identified as the major odor source for odors above threshold detection close to the plant site (< 500 ft). All stacks had less than 10 ppm (parts per million) unburned hydrocarbon as measured by a gas chromatograph with a flame ionization detector. Recommendations include ducting the ridgevent to a 25 ft stack, raising several short stacks, and adding reducing tips to several large stacks to increase their exit velocity.

Background

The Chem Fab plant has been experiencing occasional mal-odor complaints (about 2-3 per month) from several nearby neighbors even though all of its fabric coating lines have Torvex® catalytic fume abators on each of their stacks. ESD's Air Quality group was asked to provide engineering assistance to help remedy this situation. After an initial site visit (see Reference letter) to develop a scope of work, a testing program was implemented which included stack sampling for odor strength and total unburned hydrocarbons. The testing was performed on

June 19, 20, and 21 during heat cleaning of fabric and heavy Teflon®-TFE coating operations. The plant engineers indicated that these two operations are the major odor sources and that most compliants coincide with the fabric heat cleaning cycle. The odor character during this cycle has a very disagreeable character (burnt hair). The Teflon® coating cycle has a more pungent, plastic-like smell.

Odor Sampling

In order to assess the overall odor emission rate of the Chem Fab plant, an odor survey was performed for all point sources and fugitive odors. Total unburned hydrocarbon measurements were also made to check performance of the abators and determine if any correlation exists between odor strength and total organics. Odor samples were collected in large Tedlar® bags following EPA Method 18 (bag-in-a-drum). A dynamic dilution olfactometer (Figure 1) is used to evaluate each bag sample within four hours using an odor panel of at least four judges. Panelists vote electronically to indicate their perception of the odor's strength using the following scale:

1 = No odor
2 = Just Detectable (Threshold)
3 = Slight odor
4 = Moderate odor
5 = Strong odor

A dose response curve is then plotted for $\log_{10}$ dilution ratio vs. perceived odor intensity. Note Figure 2. The median odor threshold dilution ratio (Z_2) can then be determined from this graph. Z_2 represents the dilution ratio at which 50% of the panel just detected an odor and 50% did not. Z_2 can also be used to represent the odor strength of the source; ie, Z_2 = 500 means 500 cubic feet of fresh air is required to dilute one cubic foot of odorous air to reach the just detectable level.

Test Results

Table I summarizes the results of the odor evaluations and the corresponding unburned hydrocarbon concentrations measured in the stack at the same time the odor samples were collected. Based on dilution ratios the odor sources are all fairly weak, ranging from Z_2 = 320 to Z_2 = 3200. The total unburned hydrocarbon measurements support these low levels since all stacks were below 10.0 ppm (as CH_4) total organic response. All readings were taken in the stack using a Century OVA portable gas chromatograph with a flame ionization detector (FID). The portable GC/FID was calibrated with a Matheson standard mixture of 61 ppm methane in

air. Stack flow measurements were obtained from 16 point standard pilot traverses on right angle diameters.

Odor Modeling

Wilson's "Rooftop" model[1] was first employed to evaluate the Chem Fab building's wake effects and re-entrainment potential. The model very conservatively estimates the contamination of air intakes by exhaust from nearby fume hood vents. Besides defining the highly turbulent, recirculation zones above a roof, it also calculates the minimum dilution of a stack contaminant at the point of interest, ie, A/C intake or any closeby receptor. Note Figures 3 and 4.

The "Rooftop" model was run for all seven existing Chem Fab stacks using odor dilution ratio (Z_2) substituted for stack concentration (ppm). This resulted in defining the recirculation zones of the building (illustrated in Figure 5) and a dilution profile of each stack at various windspeeds including the critical wind speed (condition of lowest or minimum dilution). See Appendix A.

Several stacks (BCD, E, G, and J) had total minimum dilutions less than the source strength at their critical windspeed. This means additional stack height or other modification (tip area reduction) is required to insure that the minimum dilution of stack-to-recteptor is always greater than the odor dilution ratio (so that odors are not perceptible). These stack deficiencies were found to be minor in comparison to the odor impact of the ridgevent. A detailed list is given under "Recommendations" along with the associated individual priority.

The ridgevent is essentially a line source 300 ft long by 1.0 ft wide by 1.5 ft high. The Wilson "Rooftop" model was not appropriate for this reason. Instead, Du Pont's "STACKA" model was used. This model is a Gaussian type, very similar to EPA's FTMTP model, but with many added features. For this application, Pasquill-Gifford dispersion coefficients were used (5-10 minute averaging time) along with the Briggs-downwash option. The model can handle up to 30 sources and relate the contribution of each to a chosen downwind receptor. Graphics are also available which can label sources, receptors, and ground level maximum

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[1] D. J. Wilson. "A Design Procedure for Estimating Air Intake Contamination From Nearby Exhaust Vents." Presented at ASHRAE Meeting, (Washington, DC), 1983.

concentration. Table II summarizes the input data and Figure 6 illustrates the Chem Fab sources and one close-by receptor (300 ft away). The wind vector was chosen to align most of the stacks along it in a least squares fit. This would be a worst case situation with the stack plumes lined up as much as possible. Another feature of the "STACKA" model is its ability to find the maximum concentration under worst case meteorology searching all stabilities (A through F) and wind speeds of 3 ft/sec through 42 ft/sec. The resulting predictions of downwind concentration, in this case odor level (Z_2), are the highest conceivable by weather, wind direction, and building downwash.

One further note: In order to simulate the ridgevent, a series of 16 short stacks were evenly spaced along the roof peak. Note Figure 6. The flow and stack area were ratioed to equal the total flow of the entire ridgevent and duplicate its very low velocity (0.52 ft/sec).

Modeling Results and Discussion

The results of the composite "STACKA" modeling indicate that under worst case meteorology, the abator stacks alone do not cause perceptible odor levels either at the nearby receptor or at the point of downwind maximum concentration 2700 feet away. Note Table III, Summary of Modeling Results. Case 1 has two stabilities listed, unstable Class B results in the highest nearby receptor odor level (Z_2 = 0.28), and stable Class E results in the highest downwind odor level (Z_2 = 0.91). These two conditions are also illustrated graphically in Figures 7 and 8.

However, when the ridgevent is added into the model, a very stable Class F results in perceptible odor about four times above threshold (Z_2 = 3.8) at the nearby receptor. Note Table III, Case 2 and graphically in Figures 9 and 10. In order to see the nearby odor level pattern more clearly, Figures 11 and 12 were produced at double scale.

The ridgevent is clearly in the building's rooftop recirculation cavity and has no velocity to escape under any windspeed condition. It therefore follows the roofline flow pattern and drops toward ground level very quickly. (Note Figure 5.) In order to alleviate this condition, it must be discharged above the recirculation cavity, approximately 25 ft above roof level. Modeling this remedial condition results in a Z_2 = 0.36 worst case odor level for the nearby receptor and downwind maximum at approximate threshold (Z_2 = 1.0). (Note Table III, Case 3.) See "STACKA" output examples in Appendix B.

[illegible] extension. [illegible]

Recommendations

1. Ridgevent - Collect and duct air to raised stack (25 ft).

2. Tower E - Reduce stack tip area to 24-inch diameter.
   [illegible]

3. Tower G - Reduce stack tip area to 24-inch diameter.

4. Tower J - Raise stack 15 feet.

5. Tower BCD - Reduce stack tip area to 12-inch diameter or raise stack 6 ft.

The ridgevent is the primary odor source impacting nearby neighbors. It needs to be enclosed and ducted to a relatively tall stack. Since it is in 3 or 4 sections, each section could be ducted to a separate stack. Frank Fuller, ESD, concurs with this approach and can help with design requirements if you wish. The existing abator stacks are hot and fairly tall (except J and K). They do not downwash appreciably; but due to the sloping terrain in the area, it would be wise to enhance their dispersion with an increase in exit velocity. This can be accomplished by adding a reducing tip to Stacks BCD, E, ang G. Stack J is short and has a much higher odor intensity than Stack K next to it. Therefore, it should be raised 15 ft.

Table III, Case 4 illustrates the results of all modifications. The odor intensity level is further reduced by one-third at the nearby receptor location. Priority should be focused on the ridgevent and to a lesser extent on the stack tip reductions.

If you have any questions or require further assistance, please call me at 302-366-3219.

ENGINEERING SERVICE DIVISION
Air Quality and Hazards Engineering

P. R. Jann
Senior Engineer

PRJ:mso
PRJ 1:28

Atchs

*No appendices.

TABLE I

ODOR AND UNBURNED HYDROCARBON SAMPLE DATA - 7/11/84

	Sample ID	Tower	Odor Sampling Time	Odor Strength (Z_2 Ratio)	Total Hydrocarbon THC* (as CH_4)
6/19	A1 (Exh)	E (Heat treat)	2:00-2:10	3200	<0.1 ppm
	A2 (Exh)	E (Heat treat)	2:17-2:25	1000	<0.1 ppm
	A (Inlet)	E (Heat treat)	3:15-3:20	3200	<.4 ppm
	B1 (Exh)	BCD (TFE)	2:38-2:45	2100	3.8 ppm
6/20	1 (Inlet)	E (TFE)	3:20-3:35	1000	4.8 ppm
	7 (Exh)	E (TFE)	2:50-3:05	1000	1.2 ppm
	2 (Exh)	K (TFE)	10:25-10:40	320	3.6 - 4.4
	3 (Exh)	J (TFE)	10:45-11:00	660	1.4 - 1.8
	4 (Exh)	M (TFE)	11:10-11:22	660	.4 - .6
	5 (Exh)	G (TFE)	11:35-11:50	Bag Leaked	<0.1 ppm
	6 (Exh)	A (TFE)	2:15-2:35	660	2.8 ppm
6/21	8 (Exh)	J (TFE)	9:00-9:10	2100	8.1 - 9.5
	9 (Exh)	G (TFE)	9:18-9:35	3200	0.6
	10 (Vent)	Ridge	9:45-10:00	660	1.3 - 1.5
	11 (Exh)	E (TFE & Silcon oil)	10:05-10:15	3200	3.1 ppm

Z_2 = Median odor threshold of 4-member odor panel (50% detect, 50% do not detect odor).

*Century OVA portable GC (61 ppm, methane calib. std.) Flame Ionization Detector.

PRJ:mso
PRJ 1:29

TABLE II

CHEM FAB MODELING DATA SUMMARY

Stack I.D.	Flow cfm @ 70°F	Temperature (°F)	Diameter (in)	Area (ft^2)	Gas Exit Velocity (cfs)	Stack Height Above Roof (ft)	Odor Threshold Z_2	Total Unburned Org. (as CH_4)
Tower A	750	582.	12.	.785	31.3	3.5 + 20. cupola	660	2.8
B, C, D	3303	437.	16.	1.40	67.1	16.	2100	4.8
E	7995	544.	30.	4.91	51.4	25.5	1000 3200	<.4 1.0 - 1.4
F	NA	--	28.		--	5.	--	
G	7070	584.	30.	4.91	47.3	28.	3200	<0.2 .6 - 1.4
H	NA	--	28.		--	5.1	--	
J	1030	461.	12.	.785	38.1	6.8	660 2100	1.4 - 1.8 7.8 - 9.5
K	1030	520.	14.	1.07	29.6	8.8	320	3.6 - 4.4
M	3230	574.	16.	1.40	75.6	13.8	660	.4 - .6
Ridge	8600	124	12" x 300'	3615.	0.52	1.5	660	.4 0.6 - 1.5

PRJ:mso
PRJ 1:30

TABLE III

SUMMARY OF MODELING RESULTS

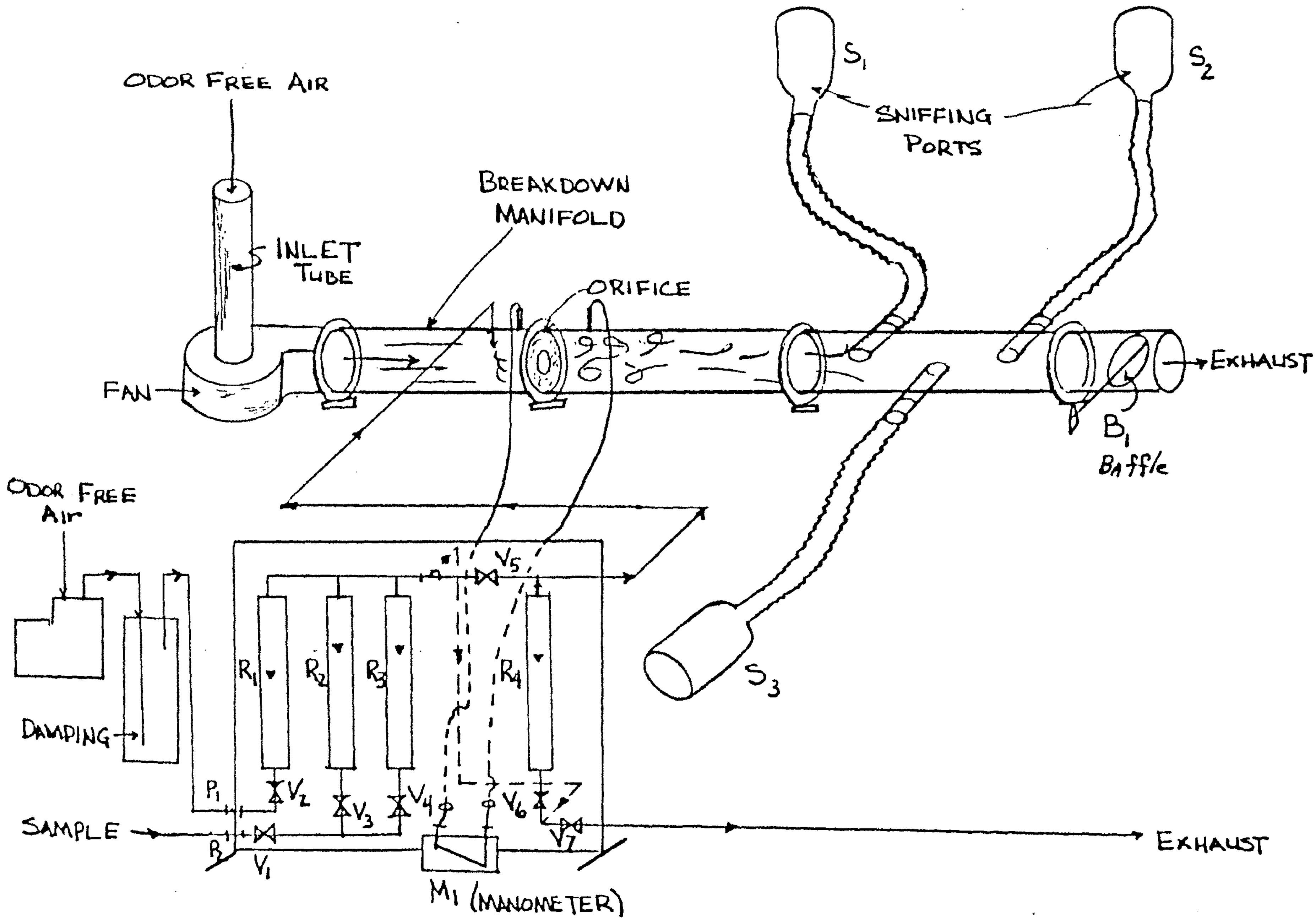
Odor Sources	Maximum Downwind Odor Level (Z_2)	Distance To Downwind Maximum* (ft)	Receptor Odor Level at 300 ft Downwind of Building (Z_2)
1. All stacks			
Unstable (B)	0.63	1000.	0.28
Stable (E)	0.91	2700.	0.016
2. All stacks plus ridgevent			
Unstable (A)	20.	160. (on roof)	0.69
Stable (F)	250.	240. (on roof)	3.8
3. All stacks plus ducted ridgevent			
Unstable (B)	0.71	1000.	0.36
Stable (E)	1.0	2700.	0.016
4. All stacks with modifications plus ducted ridgevent			
Unstable (B)	0.66	1000.	0.22
Stable (E)	0.87	2900.	0.0011

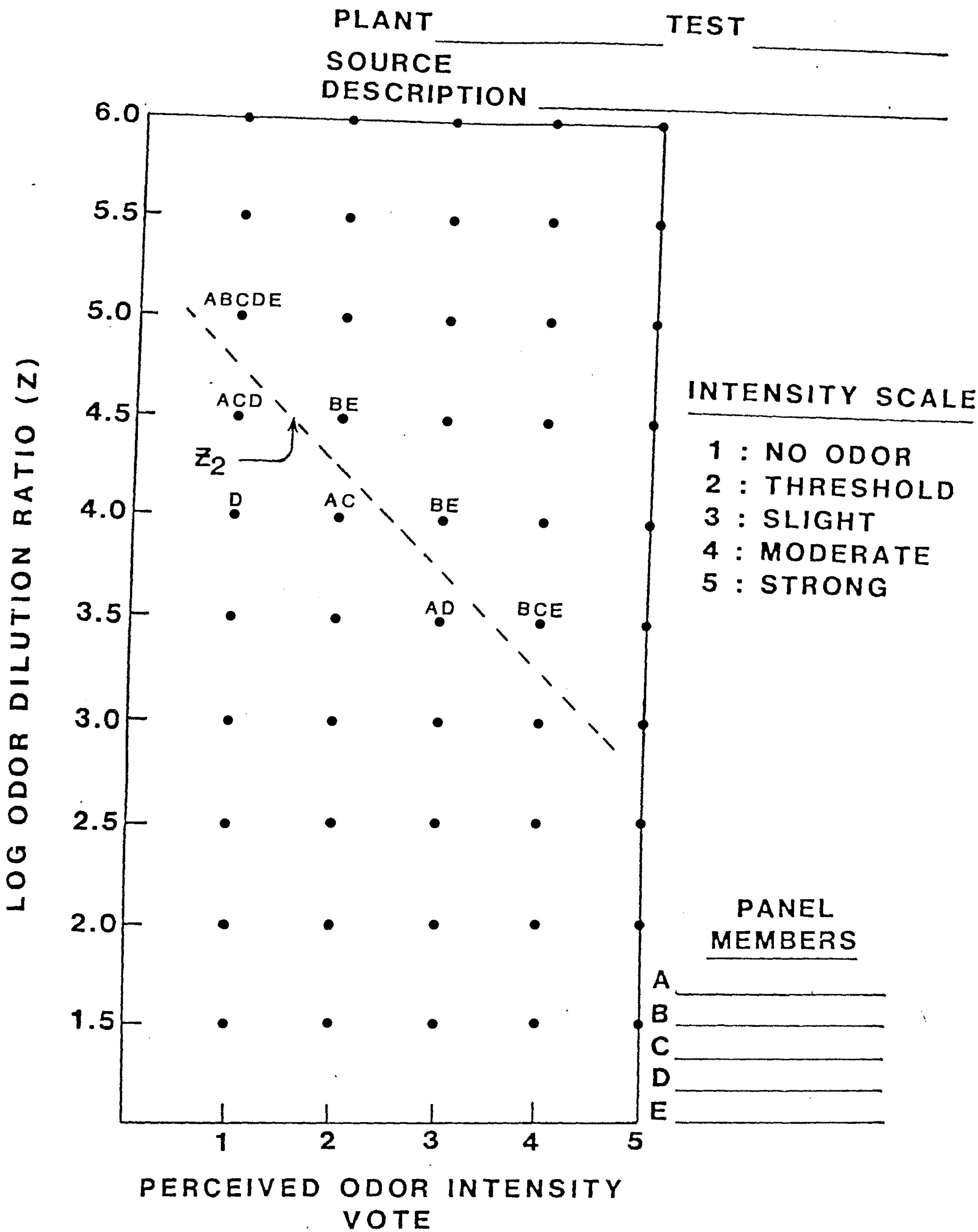
*Downwind distance refers to origin (0; 0) of model. Chem Fab building extends to 270 ft on X-axis.

Z_2 = Dilution to detection ratio. It is the volume (cubic feet) of clean air required to dilute one cubic foot of odorous air to the just detectable threshold. Z_2 ratio must be above 1.0 to be detectable by 50% of odor panel.

PRJ:mso
PRJ 1:28

FIGURE 1
OLFACTOMETER




PLANT
TEST
SOURCE DESCRIPTION
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
LOG ODOR DILUTION RATIO (Z)
ABCDE
ACD
BE
Z_2
D
AC
BE
AD
BCE
1
2
3
4
5
PERCEIVED ODOR INTENSITY VOTE
INTENSITY SCALE
1 : NO ODOR
2 : THRESHOLD
3 : SLIGHT
4 : MODERATE
5 : STRONG
PANEL MEMBERS
A
B
C
D
E

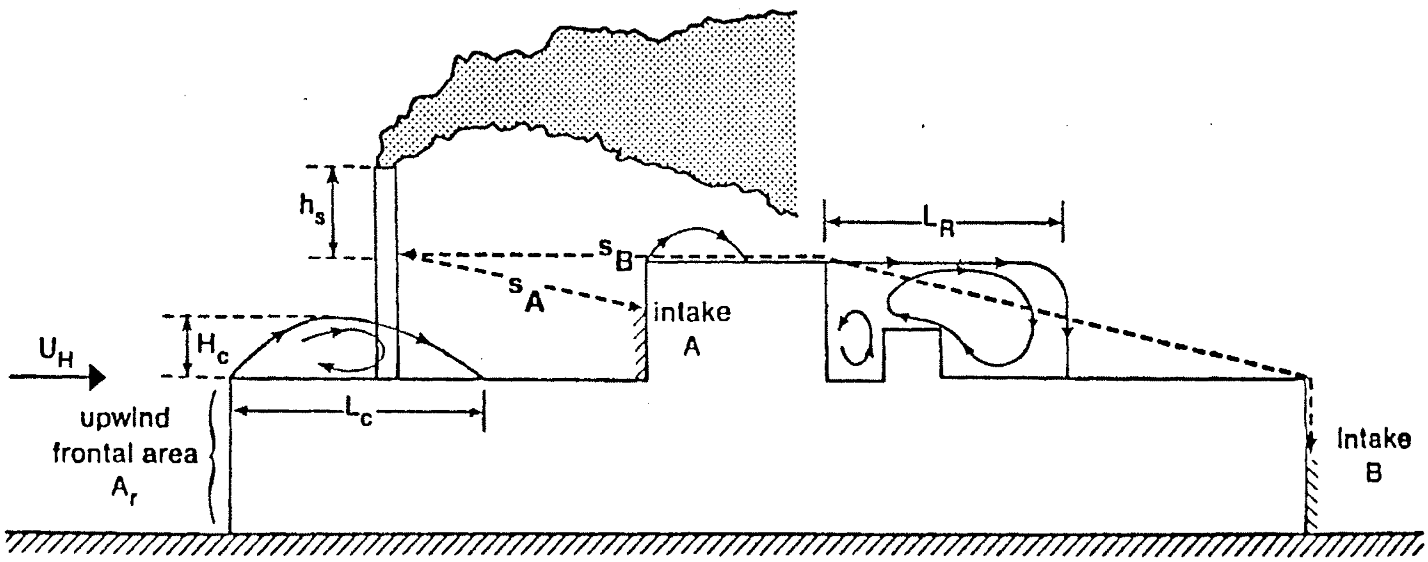


Figure 3. Effect of Rooftop Obstacles on Effective Stack Height and Vent-to-Intake Distance.

FIGURE 4

TYPICAL FLOW PATTERN AROUND CUBE A
WITH ONE FACE NORMAL TO THE WIND

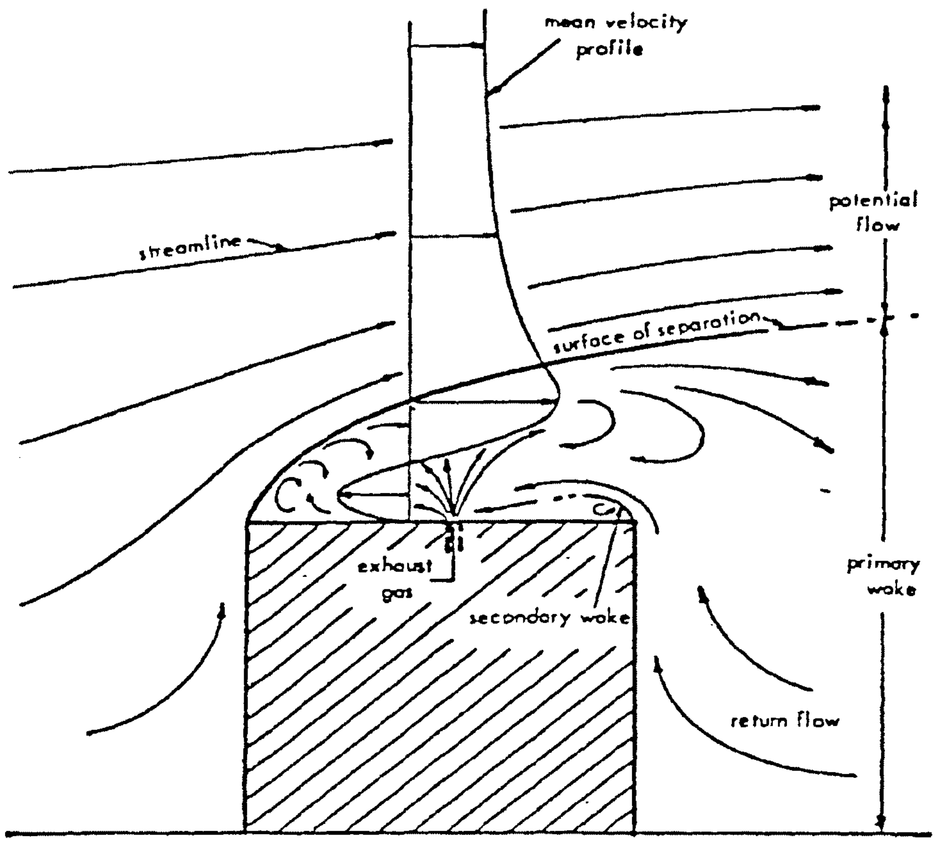
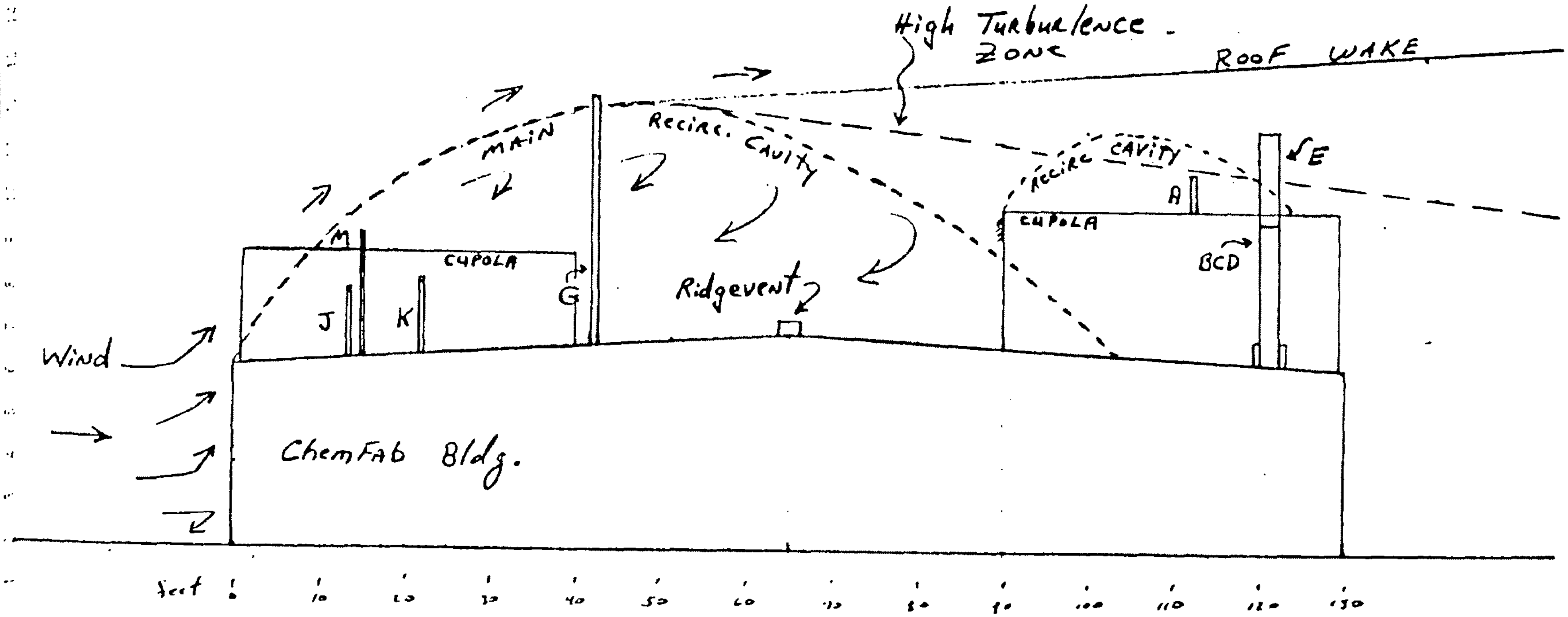


Figure 5. Flow Zones From Wilson Model

$R = 56.8$
$L_c = 104$
$H_c = 26$
$X_c = 52$



ENGINEERING COMPUTATION SHEET

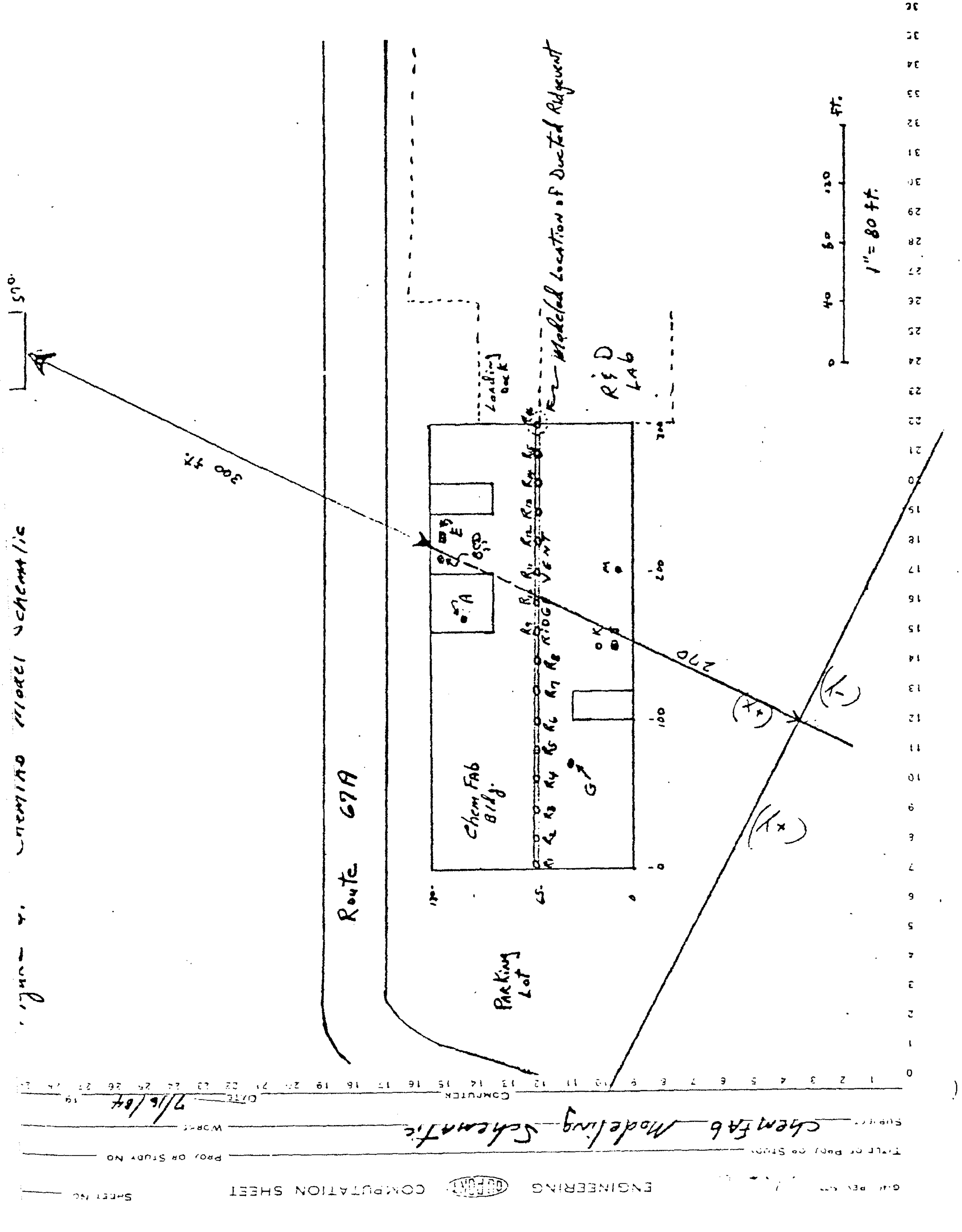


Figure 4. Chemfab Model Schematic
300 ft
Route 67A
Chem Fab Bldg.
Parking Lot
Loading Dock
R&D Lab
Modeled Location of Ducted Ridgevent
RIDGE VENT
1" = 80 ft.
0 40 80 120 ft.
270
Chem Fab Modeling Schematic
7/16/84
ENGINEERING COMPUTATION SHEET

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS
WIND - 15.0 FT/SEC. UNSTABLE

WIND DIR. = 270 DEG.
ELEVATION = 0 FT.

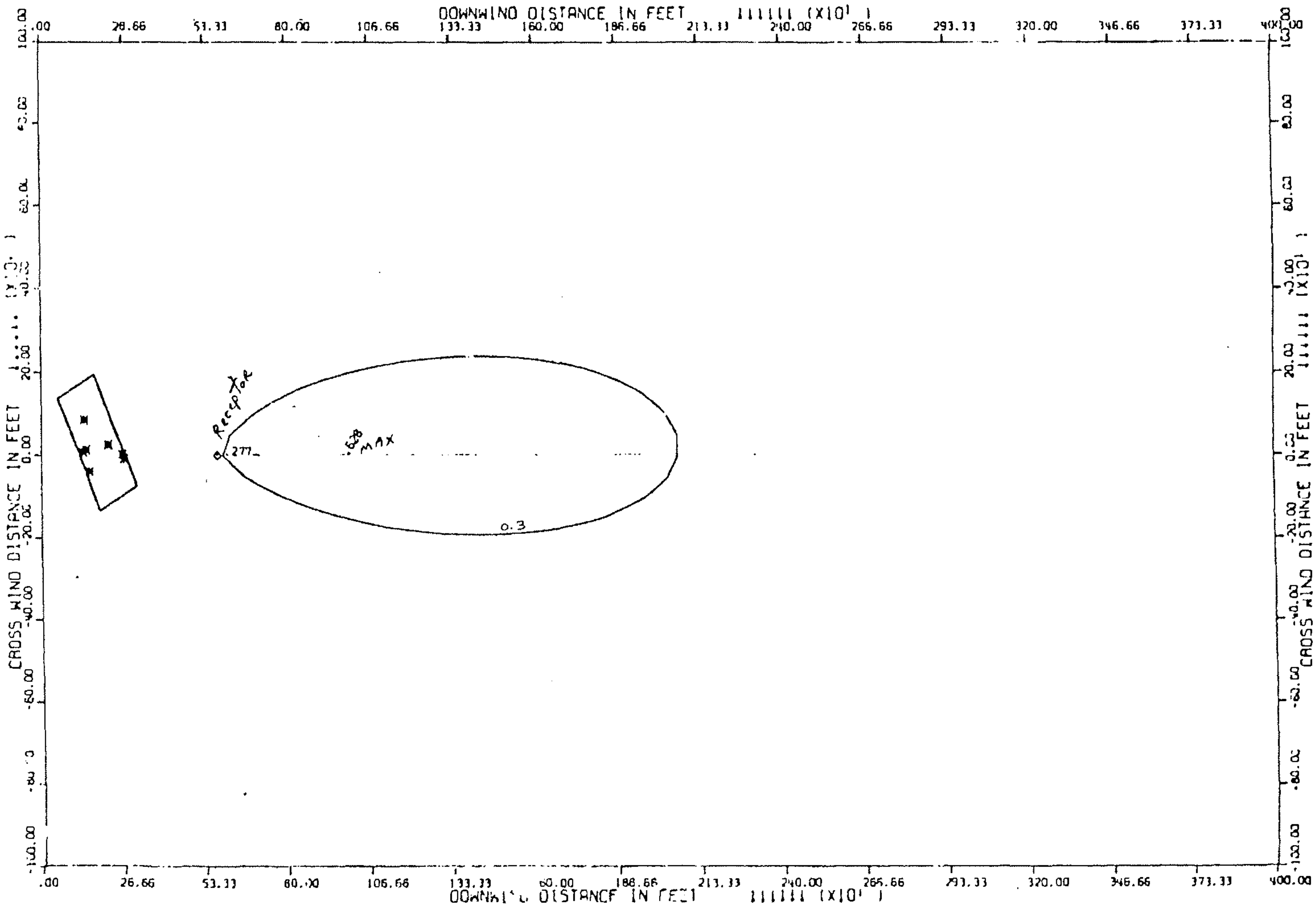


FIGURE 8

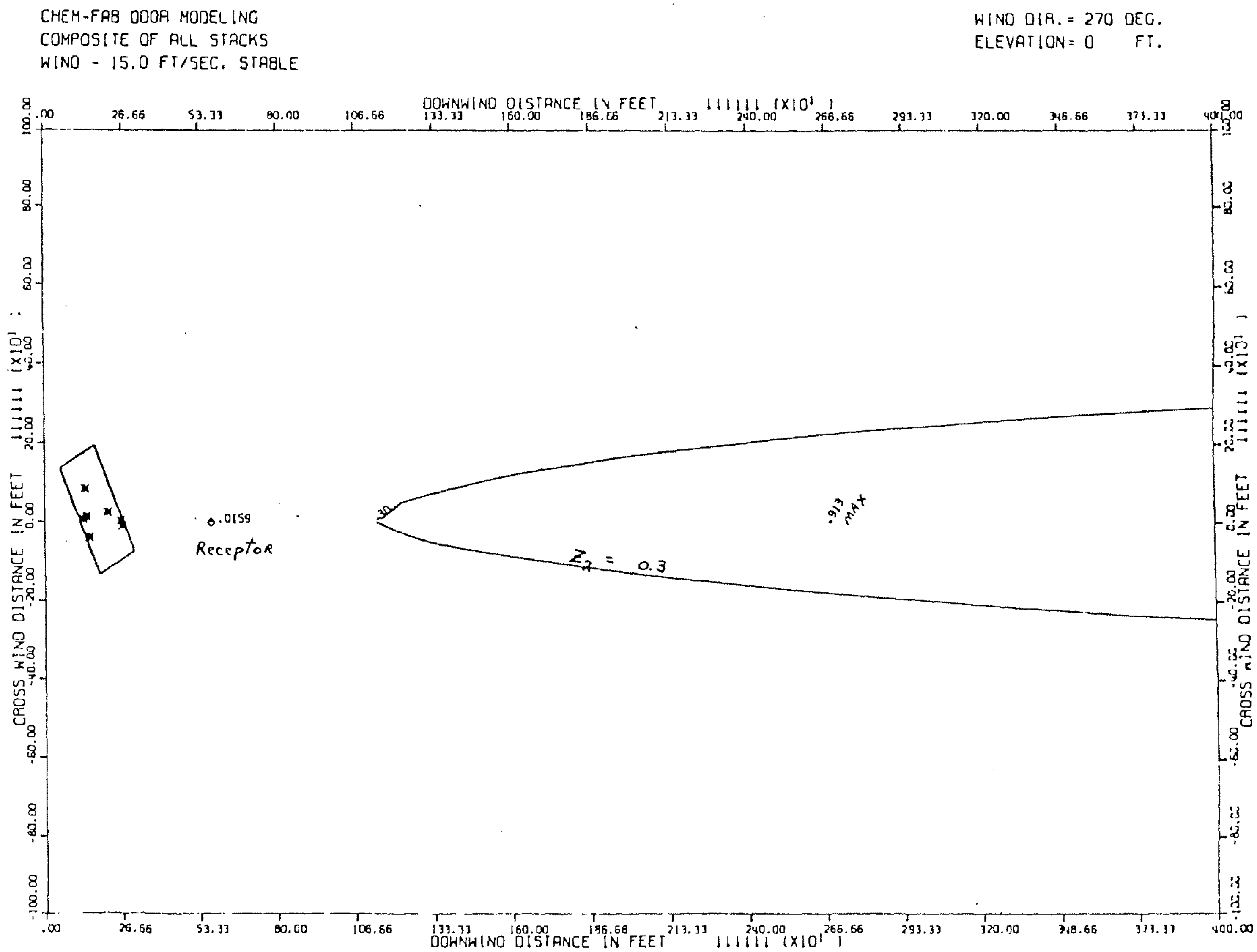
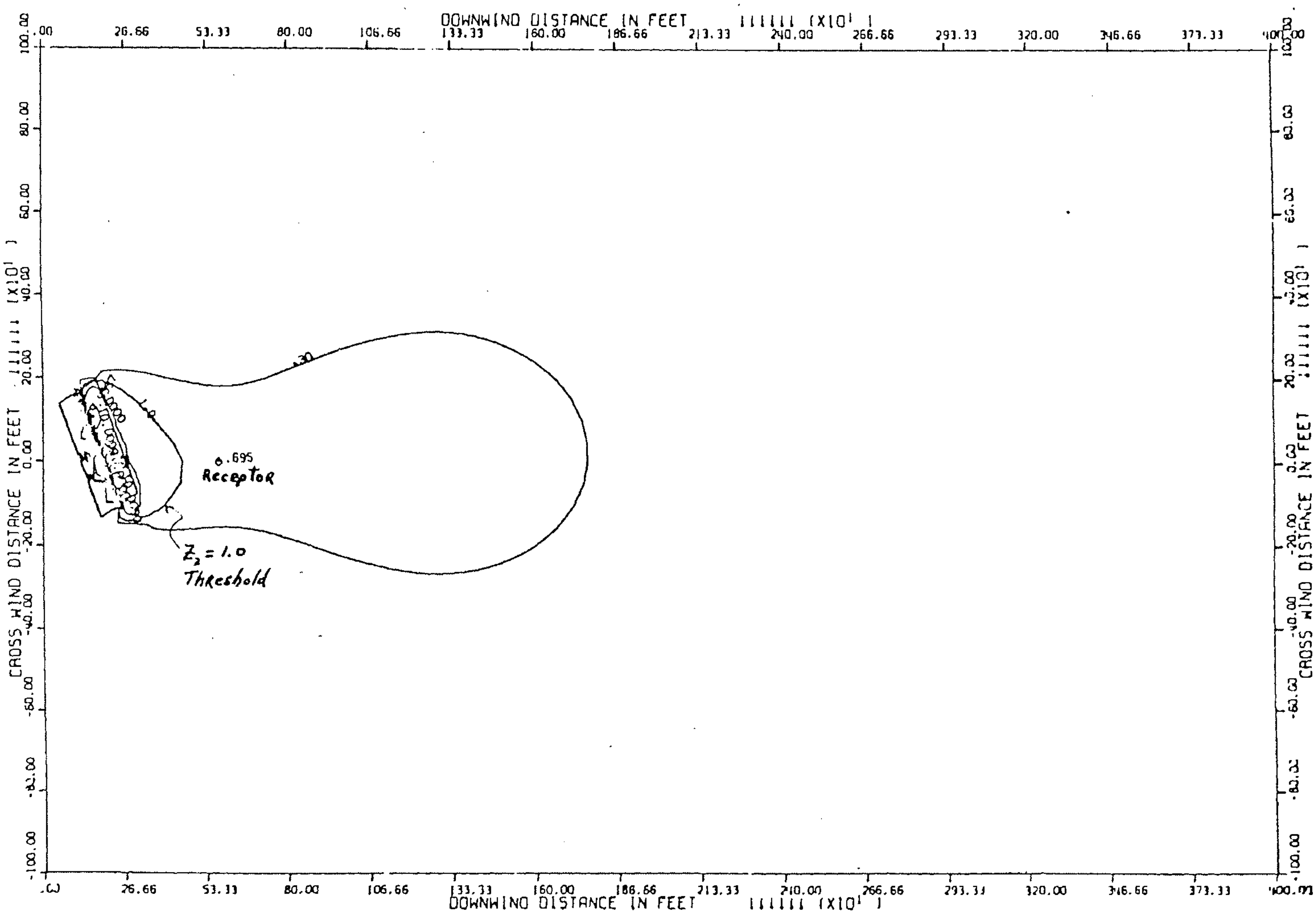

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS
WIND - 15.0 FT/SEC. STABLE
WIND DIR. = 270 DEG.
ELEVATION = 0 FT.
DOWNWIND DISTANCE IN FEET (X10¹)
.00
26.66
53.33
80.00
106.66
133.33
160.00
186.66
213.33
240.00
266.66
293.33
320.00
346.66
373.33
400.00
CROSS WIND DISTANCE IN FEET (X10¹)
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
-100.00
.0159
Receptor
.30
.913 MAX
Z = 0.3

FIGURE 9

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT
WIND - 8.2 FT/SEC. VERY UNSTABLE

WIND DIR. = 270 DEG.
ELEVATION = 0 FT.



CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT
WIND - 8.2 FT/SEC. VERY STABLE

WIND DIR. = 270 DEG.
ELEVATION = 0 FT.

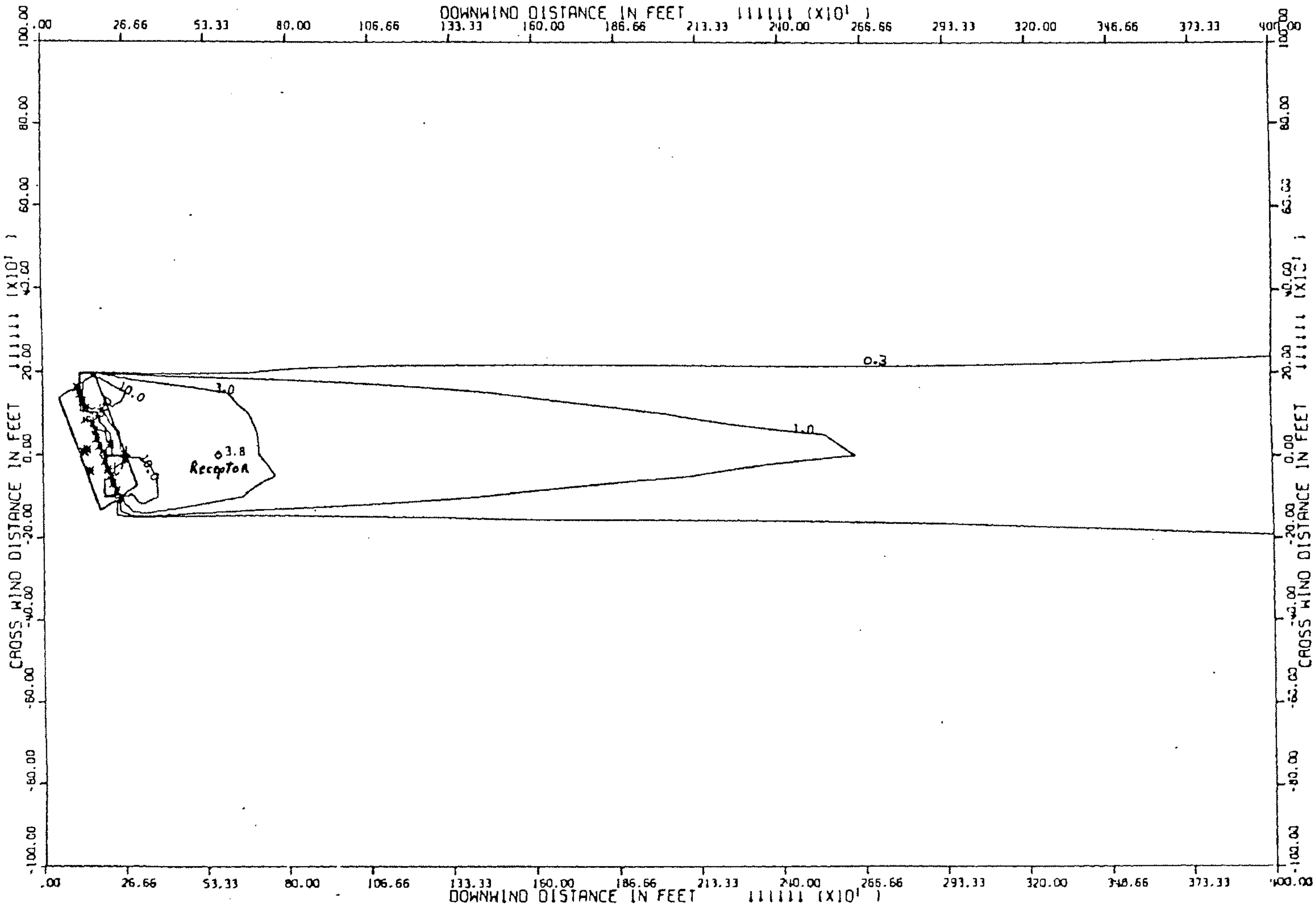
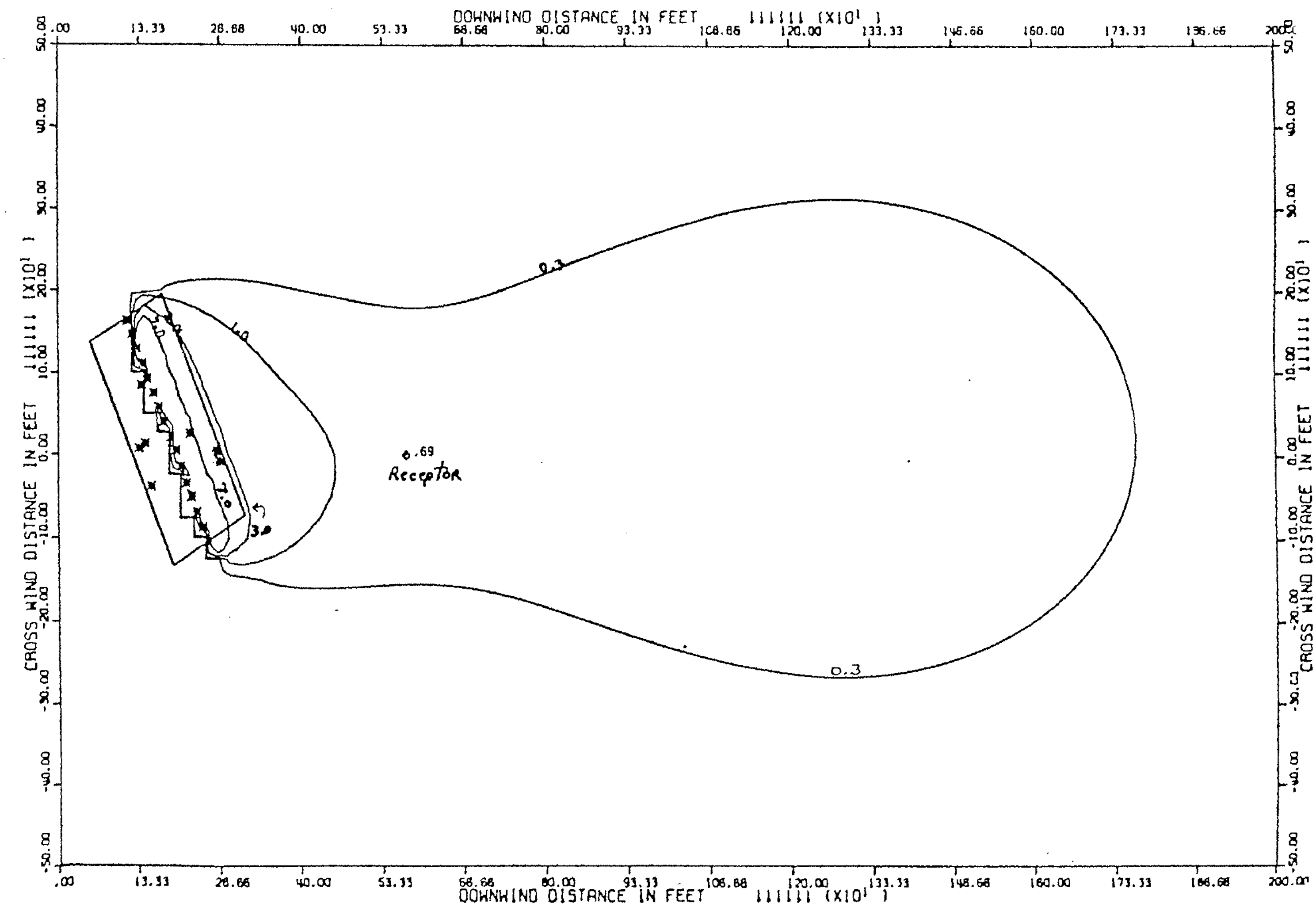


FIGURE 11

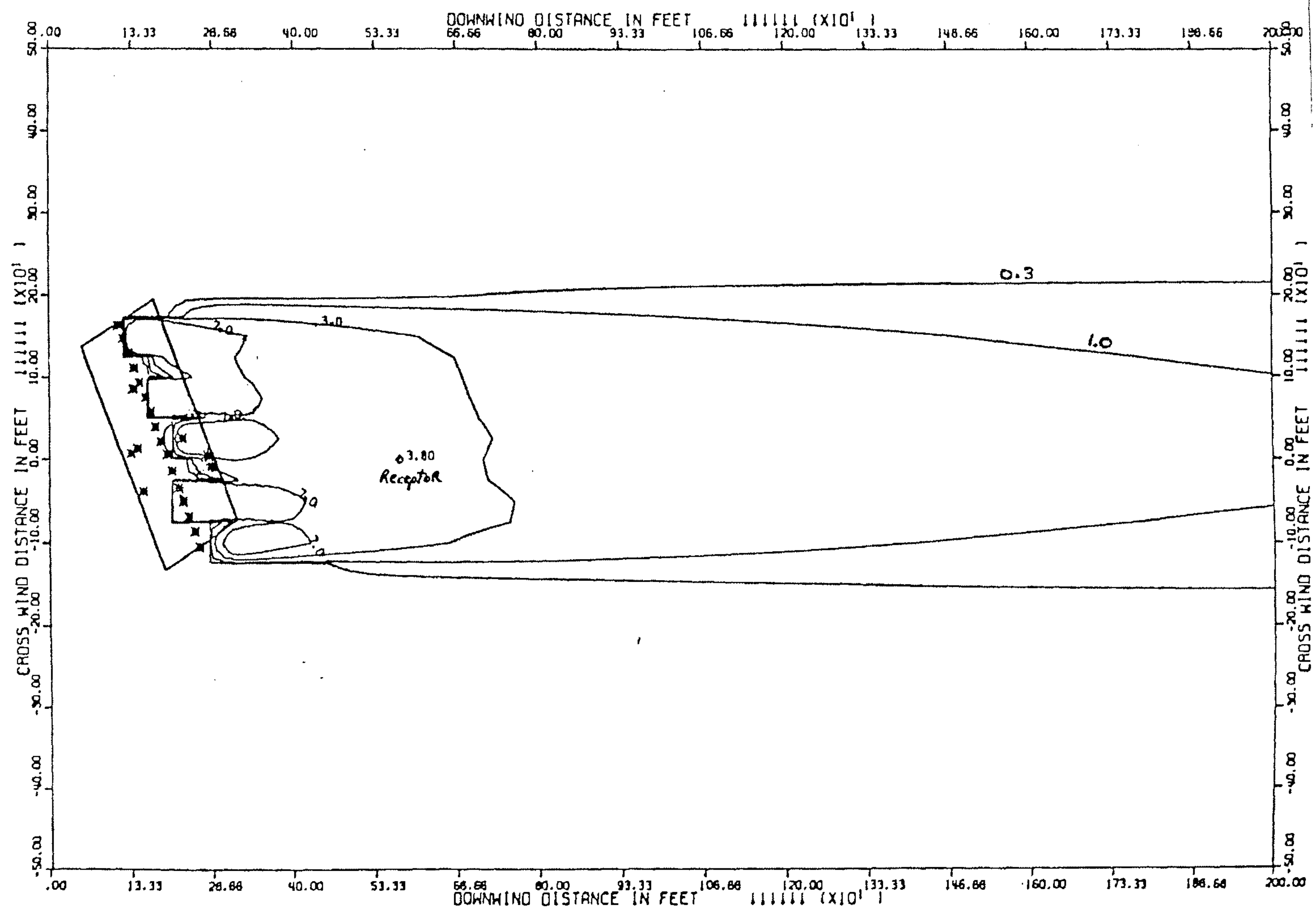
CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT
WIND - 8.2 FT/SEC. VERY UNSTABLE

WIND DIR. = 270 DEG.
ELEVATION= 0 FT.



CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT
WIND - 8.2 FT/SEC, VERY STABLE

WIND DIR.= 270 DEG.
ELEVATION= 0 FT.



APPENDIX A

ROOFTOP MODEL OUTPUT

CHEMFAB - TOWER A
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 23.5
STACK EXIT AREA (SQ FT) = .785
TOTAL EXHAUST VOLUME (CU FT/SEC) = 12.50
STACK GAS TEMP (F) = 582.0
IN-STACK CONC = .660e+03
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = 600.0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 95.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0
DIST FROM VENT TO INTAKE (FT) = 330.0
TOTAL DILUTION NEEDED TO MEET GOAL = 660.0

HEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT)
LENGTH OF OBS RECIRCULATION CAVITY = 33.9(FT)

CAUTION STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH
CAUTION STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH
EXISTING STACK IS ADEQUATE TO MEET 1-HR CONC GOAL

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	2553.9	31.3	1.2	3605.5
8.2	7957.0	11.5	1.0	8255.3
15.0	14470.6	6.3	1.0	14639.3
23.2	22308.4	3.7	1.0	22502.1
32.2	30899.9	1.9	1.0	31046.4
42.0	40247.2	.7	1.0	40365.7

CRITICAL WIND SPEED = 1.7 (FT/SEC)
MIN. DIL. BY WIND AT CRITICAL WIND SPEED = 874.0
MIN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.8
MIN. TOTAL DIL. AT CRITICAL WIND SPEED = 1538.1

CHEMFAB - TOWER B,C,D
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 16.0
STACK EXIT AREA (SQ FT) = 1.400
TOTAL EXHAUST VOLUME (CU FT/SEC) = 55.10
STACK GAS TEMP (F) = 437.0
IN-STACK CONC = .210e+04
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = .0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = .0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = .0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 125.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = .0
DIST FROM VENT TO INTAKE (FT) = 300.0
TOTAL DILUTION NEEDED TO MEET GOAL = 2100.0

HEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = .0(FT)
LENGTH OF OBS RECIRCULATION CAVITY = .0(FT)

STACK IS NOT IN BUILDING RECIRC. ZONE
STACK IS NOT IN OBSTRUCTION RECIRC. ZONE

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	580.8	88.9	9.0	5206.6
8.2	1536.0	32.5	1.6	2455.7
15.0	2772.5	17.8	1.3	3480.3
23.2	4256.2	11.5	1.2	4948.2
32.2	5880.0	8.3	1.1	6613.0
42.0	7644.7	6.4	1.1	8444.7

CRITICAL WIND SPEED = 5.3 (FT/SEC)
. DIL. BY WIND AT CRITICAL WIND SPEED = 603.5
. DIL. BY STACK AT CRITICAL WIND SPEED = 2.4
. TOTAL DIL. AT CRITICAL WIND SPEED = 1440.1

CHEMFAB - TOWER E
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 25.5
STACK EXIT AREA (SQ FT) = 4.910
TOTAL EXHAUST VOLUME (CU FT/SEC) = 133.30
STACK GAS TEMP (F) = 544.0
IN-STACK CONC = .320e+04
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = .0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = .0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = .0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 125.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = .0
DIST FROM VENT TO INTAKE (FT) = 300.0
TOTAL DILUTION NEEDED TO MEET GOAL = 3200.0

HEIGHT OF BLDG RECIRCULATION CAVITY = 25.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 103.3(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = .0(FT)
LENGTH OF OBS RECIRCULATION CAVITY = .0(FT)

STACK IS NOT IN BUILDING RECIRC. ZONE
STACK IS NOT IN OBSTRUCTION RECIRC. ZONE

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	251.3	128.6	113.2	28451.8
8.2	653.0	47.0	2.9	1862.9
15.0	1170.3	25.7	1.7	1973.5
23.2	1789.4	16.6	1.4	2548.2
32.2	2465.8	12.0	1.3	3262.1
42.0	3200.2	7.8	1.2	3991.6

CRITICAL WIND SPEED = 7.6 (FT/SEC)
MIN. DIL. BY WIND AT CRITICAL WIND SPEED = 332.0
MIN. DIL. BY STACK AT CRITICAL WIND SPEED = 3.1
MIN. TOTAL DIL. AT CRITICAL WIND SPEED = 1035.5

CHEMFAB - TOWER G
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 28.0
STACK EXIT AREA (SQ FT) = 4.910
TOTAL EXHAUST VOLUME (CU FT/SEC) = 117.80
STACK GAS TEMP (F) = 584.0
IN-STACK CONC = .320E+04
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = 800.0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 35.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0
DIST FROM VENT TO INTAKE (FT) = 400.0
TOTAL DILUTION NEEDED TO MEET GOAL = 3200.0

EIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
ENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
EIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT)
ENGTH OF OBS RECIRCULATION CAVITY = 33.9(FT)

TACK IS NOT IN BUILDING RECIRC. ZONE
*CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	486.9	118.2	6.0	2896.9
8.2	1283.5	43.2	1.3	1722.3
15.0	2313.9	23.6	1.1	2588.4
23.2	3549.7	15.3	1.1	3771.9
32.2	4901.8	10.8	1.0	5100.8
42.0	6370.9	8.6	1.0	6524.2

TICAL WIND SPEED = 5.2 (FT/SEC)
I. DIL. BY WIND AT CRITICAL WIND SPEED = 436.2
I. DIL. BY STACK AT CRITICAL WIND SPEED = 1.9
. TOTAL DIL. AT CRITICAL WIND SPEED = 816.2

CHEMFAB - TOWER J
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 6.8
STACK EXIT AREA (SQ FT) = .785
TOTAL EXHAUST VOLUME (CU FT/SEC) = 17.20
STACK GAS TEMP (F) = 461.0
IN-STACK CONC = .210e+04
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = 800.0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 12.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0
DIST FROM VENT TO INTAKE (FT) = 420.0
TOTAL DILUTION NEEDED TO MEET GOAL = 2100.0

HEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT)
LENGTH OF OBS RECIRCULATION CAVITY = 33.9(FT)

CAUTION STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH
CAUTION STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	3467.3	38.1	1.1	3692.2
8.2	9350.6	13.9	1.0	9351.1
15.0	17012.7	7.6	1.0	17066.8
23.2	26234.0	4.9	1.0	26417.4
32.2	36343.1	2.9	1.0	36736.2
42.0	47342.2	1.5	1.0	48001.8

CRITICAL WIND SPEED = 1.6 (FT/SEC)
MIN. DIL. BY WIND AT CRITICAL WIND SPEED = 1103.8
MIN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.4
MIN. TOTAL DIL. AT CRITICAL WIND SPEED = 1534.6

CHEMFAB - TOWER K
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 8.8
STACK EXIT AREA (SQ FT) = 1.070
TOTAL EXHAUST VOLUME (CU FT/SEC) = 17.20
STACK GAS TEMP (F) = 520.0
IN-STACK CONC = .320e+03
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = 800.0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 22.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0
DIST FROM VENT TO INTAKE (FT) = 410.0
TOTAL DILUTION NEEDED TO MEET GOAL = 320.0

HEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT)
LENGTH OF OBS RECIRCULATION CAVITY = 33.9(FT)

*CAUTION** STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH
*CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH
XISTING STACK IS ADEQUATE TO MEET 1-HR CONC GOAL

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	3306.9	34.7	1.1	3507.4
8.2	8915.2	12.7	1.0	8917.3
15.0	16218.3	6.9	1.0	16249.8
23.2	25007.2	4.0	1.0	25146.3
32.2	34641.9	1.9	1.0	34964.0
42.0	45124.8	.6	1.0	45665.8

ITICAL WIND SPEED = 1.5 (FT/SEC)
N. DIL. BY WIND AT CRITICAL WIND SPEED = 928.1
N. DIL. BY STACK AT CRITICAL WIND SPEED = 1.4
N. TOTAL DIL. AT CRITICAL WIND SPEED = 1316.8

HEMFAE - TOWER M
ASIC DATA SUMMARY

TACK HEIGHT (FT) = 15.2
TACK EXIT AREA (SQ FT) = 1.400
OTAL EXHAUST VOLUME (CU FT/SEC) = 53.80
TACK GAS TEMP (F) = 574.0
N-STACK CONC = .660e+03
ONCENTRATION UNITS = PPM(VOL)
AIN CAP STATUS = NO RAIN CAP ON VENT
REA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
REA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = 400.0
EIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
EIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 10.0
ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 90.0
IST FROM VENT TO INTAKE (FT) = 425.0
OTAL DILUTION NEEDED TO MEET GOAL = 660.0

EIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
ENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
EIGHT OF OBS RECIRCULATION CAVITY = 6.0(FT)
ENGTH OF OBS RECIRCULATION CAVITY = 24.0(FT)

*CAUTION** STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH
*CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH
XISTING STACK IS ADEQUATE TO MEET 1-HR CONC GOAL

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	1154.1	100.1	2.4	2792.5
8.2	3108.5	36.6	1.1	3407.5
15.0	5633.3	20.0	1.0	5741.1
23.2	8667.5	12.9	1.0	8706.7
32.2	11990.8	9.3	1.0	12002.4
42.0	15604.6	7.1	1.0	15606.0

RITICAL WIND SPEED = 4.2 (FT/SEC)
IN. DIL. BY WIND AT CRITICAL WIND SPEED = 843.9
IN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.5
IN. TOTAL DIL. AT CRITICAL WIND SPEED = 1275.7

nem#s3 - ridgevent
ASIC DATA SUMMARY

TACK HEIGHT (FT) = 1.5
TACK EXIT AREA (SQ FT) = *****
OTAL EXHAUST VOLUME (CU FT/SEC) = 143.30
TACK GAS TEMP (F) = 124.0
N-STACK CONC = .660e+03
ONCENTRATION UNITS = PPM(VOL)
AIN CAP STATUS = NO RAIN CAP ON VENT
REA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
REA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = 800.0
EIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
EIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 65.0
ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 30.0
IST FROM VENT TO INTAKE (FT) = 365.0
OTAL DILUTION NEEDED TO MEET GOAL = 660.0

EIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
ENGTH OF BLDG RECIRCULATION CAVITY = 103.5(FT)
EIGHT OF OBS RECIRCULATION CAVITY = 9.5(FT)
ENGTH OF OBS RECIRCULATION CAVITY = 33.9(FT)

*CAUTION** STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH
*CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	339.6	-41.6	1.6	552.3
8.2	838.5	-52.5	2.0	1750.7
15.0	1537.6	-55.3	2.1	3325.7
23.2	2446.8	-56.5	2.1	5218.4
32.2	3375.2	-57.1	2.2	7283.5
42.0	4383.6	-57.5	2.2	9539.5

RITICAL WIND SPEED = .5 (FT/SEC)
N. DIL. BY WIND AT CRITICAL WIND SPEED = 60.7
N. DIL. BY STACK AT CRITICAL WIND SPEED = 1.1
N. TOTAL DIL. AT CRITICAL WIND SPEED = 65.0

chem#a2 - niagevent
BASIC DATA SUMMARY

STACK HEIGHT (FT) = 1.5
STACK EXIT AREA (SQ FT) = *****
TOTAL EXHAUST VOLUME (CU FT/SEC) = 143.30
STACK GAS TEMP (F) = 124.0
IN-STACK CONC = .550e+03
CONCENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
AREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = .0
HEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = .0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = .0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 65.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = .0
DIST FROM VENT TO INTAKE (FT) = 365.0
TOTAL DILUTION NEEDED TO MEET GOAL = 660.0

HEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = .0(FT)
LENGTH OF OBS RECIRCULATION CAVITY = .0(FT)

CAUTION STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH
STACK IS NOT IN OBSTRUCTION RECIRC. ZONE

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	339.6	-41.6	1.2	421.7
8.2	888.8	-52.5	1.4	1250.9
15.0	1597.6	-55.3	1.5	2358.9
23.2	2446.8	-56.5	1.5	3677.3
32.2	3375.2	-57.1	1.5	5119.7
42.0	4383.6	-57.5	1.5	6686.6

CRITICAL WIND SPEED = .5 (FT/SEC)
MIN. DIL. BY WIND AT CRITICAL WIND SPEED = 60.7
MIN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.3
MIN. TOTAL DIL. AT CRITICAL WIND SPEED = 73.6

APPENDIX B

"STACKA" MODEL OUTPUT

Case 1) stable

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

MISC. DATA

WIND SPEED (FT/SEC)	INITIAL WIND DIRECTION (DEG)	ACTUAL WIND DIRECTION (DEG)	DISPERSION EQUATION IEQUA	STABILITY CLASS ICLASS	AMBIENT TEMPERATURE (DEG F)	TIME ADJUSTMENT FACTOR	INVERSION LAYER ELEV(FT)
15.00	270.0	.0	GIFFORD	E	70.0	1.0000	.000

MIN. DOWNWIND DISTANCE (FT)	MAX. DOWNWIND DISTANCE (FT)	MIN. CROSSWIND DISTANCE (FT)	MAX. CROSSWIND DISTANCE (FT)	NO. OF DOWNWIND INCREMENTS NX	NO. OF CROSSWIND INCREMENTS NY	PLOTTED OUTPUT DESIRED NPLOT	STACK LOCATIONS PLOTTED? NLOC
.0	4000.0	-2000.0	2000.0	41	11	3	0

NO. OF STACKS NOS	NO. OF Z INCREMENTS NX	NO. OF AXIS SHIFTS NSHIFT	NO. OF CONC. LEVELS SUPPLIED NC	NO. OF RECEPTOR POINTS NR	NO. OF LINE COORDINATES NL
7	0	1	0	0	0

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	8.3000-03	TOWER A
2	260.0	4.0	1.1600-01	TOWER B,C,D
3	266.0	-8.0	4.2600-01	TOWER E
4	136.0	86.0	3.7700-01	TOWER G
5	132.0	8.0	3.6000-02	TOWER J
6	142.0	14.0	6.0000-03	TOWER K
7	152.0	-38.0	3.6000-02	TOWER M

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

STACK DATA (CONT.)

STACK NO.	ACTUAL STACK HEIGHT (FT)	STACK TEMP. (DEG F)	STACK DIAMETER (FT)	VOLUMETRIC FLOW AT 70 DEG F (SCFS)	MOLECULAR WEIGHT OF GAS	HEAT RELEASE OR BUILD HEIGHT	STUMKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	VOLUMETRIC FLOW AT AMB. TEMP. (CU.FT./SEC)	GAS EXIT VELOCITY (FT/SEC)
1	47.50	582.00	1.00	12.50	29.10	300.00	25.00	B-DOWN	12.50	31.29
2	39.00	437.00	1.33	55.10	29.10	300.00	25.00	B-DOWN	55.10	67.12
3	48.50	544.00	2.50	133.30	29.10	300.00	25.00	B-DOWN	133.30	51.44
4	52.00	584.00	2.50	117.80	29.10	300.00	25.00	B-DOWN	117.80	47.27
5	29.80	461.00	1.00	17.20	29.10	300.00	25.00	B-DOWN	17.20	38.06
6	32.80	520.00	1.17	17.20	29.10	300.00	25.00	B-DOWN	17.20	29.58
7	36.80	574.00	1.33	53.80	29.10	300.00	25.00	B-DOWN	53.80	75.55

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

EFFECTIVE STACK HEIGHT DATA

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	135.1	77.6	62.6	56.2	52.9	51.0
2	196.8	94.2	67.4	55.9	50.1	46.6
3	276.3	127.1	88.1	71.4	62.9	57.8
4	270.7	127.3	89.7	73.8	65.6	60.7
5	123.0	62.0	46.0	39.2	35.8	33.7
6	126.6	64.9	48.8	41.9	38.4	36.2
7	212.6	98.6	68.8	56.1	49.6	45.7

MAXIMUM CONCENTRATION DATA

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	1.29-02	1.72-02	1.56-02	1.30-02	1.07-02	9.00-03
2	7.45-02	1.53-01	1.83-01	1.83-01	1.71-01	1.55-01
3	1.23-01	2.79-01	3.60-01	3.79-01	3.68-01	3.44-01
4	1.15-01	2.46-01	3.04-01	3.12-01	2.96-01	2.72-01
5	6.94-02	1.26-01	1.39-01	1.27-01	1.11-01	9.65-02
6	1.08-02	1.89-02	2.02-02	1.84-02	1.60-02	1.38-02
7	1.93-02	4.27-02	5.42-02	5.65-02	5.43-02	5.05-02

DISTANCE DOWNWIND OF MAXIMUM CONCENTRATION

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	4947.1	2207.8	1614.0	1379.3	1263.9	1196.0
2	8561.5	2926.8	1795.8	1369.4	1165.9	1048.5
3	13200.0	4526.4	2652.5	1955.3	1625.5	1436.7
4	13200.0	4536.0	2726.9	2048.8	1726.5	1541.1
5	4318.6	1591.4	1031.5	905.5	810.8	754.6
6	4503.4	1700.7	1121.2	978.3	881.2	823.6
7	9579.5	3127.0	1850.2	1373.8	1148.1	1018.6

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)
15.0	.0	270.0	.0	.0

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	62.62	8.3000-03	TOWER A
2	260.0	4.0	67.37	1.1600-01	TOWER B,C,D
3	266.0	-8.0	88.06	4.2600-01	TOWER E
4	136.0	86.0	89.75	3.7700-01	TOWER G
5	132.0	8.0	46.05	3.6000-02	TOWER J
6	142.0	14.0	48.76	6.0000-03	TOWER K
7	152.0	-38.0	68.77	3.6000-02	TOWER M

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)

COMPOSITE OF ALL STACKS

MAXIMUM CONCENTRATION DATA

STACK NO.	CONTRIBUTION TO MAXIMUM CONCENTRATION	RELATIVE CONTRIBUTION	STACK IDENTIFICATION
1	1.2861-02	.01408	TOWER A
2	1.5729-01	.18319	TOWER B,C,D
3	3.5583-01	.38965	TOWER E
4	2.4463-01	.26788	TOWER G
5	7.3686-02	.08069	TOWER J
6	1.1798-02	.01292	TOWER K
7	4.7102-02	.05158	TOWER M

DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	MAXIMUM CONCENTRATION	STABILITY	wind speed
2700.00	.00	9.1319-01	5	15.0 fps

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

Class E
10 mph (15.0 fps)

centerline

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1500. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	.004	.000	.000	.000	.000	.000
600	.000	.000	.000	.000	.000	.023	.000	.000	.000	.000	.000
700	.000	.000	.000	.000	.000	.058	.000	.000	.000	.000	.000
800	.000	.000	.000	.000	.000	.100	.000	.000	.000	.000	.000
900	.000	.000	.000	.000	.000	.146	.000	.000	.000	.000	.000
1000	.000	.000	.000	.000	.000	.202	.000	.000	.000	.000	.000
1100	.000	.000	.000	.000	.000	.271	.000	.000	.000	.000	.000
1200	.000	.000	.000	.000	.000	.349	.000	.000	.000	.000	.000
1300	.000	.000	.000	.000	.000	.427	.000	.000	.000	.000	.000
1400	.000	.000	.000	.000	.000	.498	.000	.000	.000	.000	.000
1500	.000	.000	.000	.000	.000	.566	.000	.000	.000	.000	.000
1600	.000	.000	.000	.000	.000	.630	.000	.000	.000	.000	.000
1700	.000	.000	.000	.000	.000	.687	.000	.000	.000	.000	.000
1800	.000	.000	.000	.000	.000	.738	.000	.000	.000	.000	.000
1900	.000	.000	.000	.000	.000	.781	.001	.000	.000	.000	.000
2000	.000	.000	.000	.000	.000	.818	.002	.000	.000	.000	.000
2100	.000	.000	.000	.000	.000	.847	.003	.000	.000	.000	.000
2200	.000	.000	.000	.000	.001	.873	.004	.000	.000	.000	.000
2300	.000	.000	.000	.000	.001	.888	.006	.000	.000	.000	.000
2400	.000	.000	.000	.000	.002	.900	.009	.000	.000	.000	.000
2500	.000	.000	.000	.000	.003	.908	.013	.000	.000	.000	.000
2600	.000	.000	.000	.000	.004	.912	.017	.000	.000	.000	.000
2700	.000	.000	.000	.000	.006	.913	.022	.000	.000	.000	.000
2800	.000	.000	.000	.000	.008	.911	.027	.000	.000	.000	.000
2900	.000	.000	.000	.000	.011	.907	.033	.000	.000	.000	.000
3000	.000	.000	.000	.000	.014	.900	.040	.000	.000	.000	.000
3100	.000	.000	.000	.000	.018	.892	.047	.000	.000	.000	.000
3200	.000	.000	.000	.000	.022	.882	.055	.000	.000	.000	.000
3300	.000	.000	.000	.000	.027	.872	.063	.000	.000	.000	.000
3400	.000	.000	.000	.000	.032	.860	.071	.000	.000	.000	.000
3500	.000	.000	.000	.000	.037	.848	.080	.000	.000	.000	.000
3600	.000	.000	.000	.000	.043	.835	.088	.000	.000	.000	.000
3700	.000	.000	.000	.000	.049	.821	.097	.000	.000	.000	.000
3800	.000	.000	.000	.000	.056	.808	.105	.000	.000	.000	.000
3900	.000	.000	.000	.000	.062	.794	.114	.000	.000	.000	.000
4000	.000	.000	.000	.000	.068	.780	.122	.000	.000	.000	.000

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

MAX DOWNWIND CONC. UNDER ALL METEOROLOGICAL CONDITIONS

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	.047	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	.149	.000	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	.204	.000	.000	.000	.000	.000
600	.000	.000	.000	.000	.001	.311	.001	.000	.000	.000	.000
700	.000	.000	.000	.000	.004	.436	.009	.000	.000	.000	.000
800	.000	.000	.000	.000	.012	.544	.029	.000	.000	.000	.000
900	.000	.000	.000	.000	.029	.618	.058	.000	.000	.000	.000
1000	.000	.000	.000	.000	.053	.645	.093	.001	.000	.000	.000
1100	.000	.000	.000	.001	.082	.653	.128	.002	.000	.000	.000
1200	.000	.000	.000	.002	.109	.658	.156	.004	.000	.000	.000
1300	.000	.000	.000	.003	.130	.646	.173	.008	.000	.000	.000
1400	.000	.000	.000	.006	.142	.622	.180	.012	.000	.000	.000
1500	.000	.000	.000	.010	.146	.620	.180	.017	.000	.000	.000
1600	.000	.000	.000	.015	.161	.630	.192	.024	.001	.000	.000
1700	.000	.000	.001	.023	.182	.687	.214	.033	.002	.000	.000
1800	.000	.000	.001	.031	.198	.738	.228	.043	.003	.000	.000
1900	.000	.000	.002	.039	.206	.781	.235	.052	.004	.000	.000
2000	.000	.000	.004	.046	.209	.818	.235	.060	.006	.000	.000
2100	.000	.000	.005	.052	.206	.847	.230	.066	.008	.000	.000
2200	.000	.000	.007	.057	.199	.870	.220	.070	.010	.001	.000
2300	.000	.001	.009	.060	.190	.888	.208	.073	.013	.001	.000
2400	.000	.001	.011	.062	.179	.900	.196	.074	.015	.002	.000
2500	.000	.001	.013	.063	.167	.908	.193	.074	.016	.002	.000
2600	.000	.002	.014	.063	.165	.912	.190	.073	.018	.003	.000
MAX → 2700	.000	.002	.016	.062	.163	.913	.185	.071	.019	.003	.000
2800	.000	.003	.017	.061	.171	.911	.190	.069	.021	.004	.000
2900	.000	.003	.018	.059	.178	.907	.197	.067	.021	.004	.001
3000	.001	.004	.018	.057	.184	.900	.202	.064	.022	.005	.001
3100	.001	.004	.019	.056	.189	.892	.207	.068	.023	.006	.001
3200	.001	.005	.019	.062	.193	.882	.210	.074	.023	.006	.001
3300	.001	.005	.020	.067	.196	.872	.212	.079	.023	.007	.001
3400	.001	.006	.020	.071	.198	.860	.213	.084	.023	.007	.001
3500	.001	.006	.020	.076	.199	.848	.214	.089	.023	.007	.002
3600	.002	.007	.020	.080	.199	.835	.214	.093	.023	.008	.002
3700	.002	.007	.020	.084	.199	.821	.213	.096	.025	.008	.002
3800	.002	.007	.023	.087	.198	.808	.211	.099	.028	.008	.002

3900	.002	.007	.025	.090	.196	.794	.209	.102	.030	.009	.003	
4000	.002	.008	.027	.092	.195	.780	.207	.104	.033	.009	.003	

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS

METEOROLOGICAL CONDITIONS CORRESPONDING TO MAX DOWNWIND CONC.

STABILITY - WIND SPEED

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0
100	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0
200	0- .0	0- .0	0- .0	0- .0	0- .0	2-15.0	0- .0	0- .0	0- .0	0- .0	0- .0
300	0- .0	0- .0	0- .0	0- .0	1- 8.2	2-15.0	1- 8.2	0- .0	0- .0	0- .0	0- .0
400	0- .0	0- .0	0- .0	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	0- .0	0- .0	0- .0
500	0- .0	0- .0	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	0- .0	0- .0
600	0- .0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	0- .0
700	0- .0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	0- .0
800	1- 3.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	3-32.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
900	1- 3.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	3-32.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1000	1- 3.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	3-32.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1100	1- 3.0	1- 3.0	1- 8.2	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1200	1- 3.0	1- 3.0	1- 8.2	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1300	1- 3.0	1- 3.0	1- 8.2	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1400	1- 3.0	1- 3.0	1- 8.2	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1500	1- 3.0	1- 3.0	1- 3.0	1- 8.2	1- 8.2	3-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1600	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1700	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1800	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1900	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2000	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2100	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2200	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2300	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2400	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2500	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2600	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 8.2	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2700	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2800	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2900	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
3000	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
3100	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3200	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3300	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3400	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3500	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3600	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0

3700	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
3800	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
3900	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
4000	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

Case 2) v. unstable

MISC. DATA

WIND SPEED (FT/SEC)	INITIAL WIND DIRECTION (DEG)	ACTUAL WIND DIRECTION (DEG)	DISPERSION EQUATION IEQUA	STABILITY CLASS ICLASS	AMBIENT TEMPERATURE (DEG F)	TIME ADJUSTMENT FACTOR	INVERSION LAYER ELEV(FT)
8.20	270.0	.0	GIFFORD	A	70.0	1.0000	.000

MIN. DOWNWIND DISTANCE (FT)	MAX. DOWNWIND DISTANCE (FT)	MIN. CROSSWIND DISTANCE (FT)	MAX. CROSSWIND DISTANCE (FT)	NO. OF DOWNWIND INCREMENTS NX	NO. OF CROSSWIND INCREMENTS NY	PLOTTED OUTPUT DESIRED NPLOT	STACK LOCATIONS PLOTTED? NLOC
.0	4000.0	-2000.0	2000.0	41	11	3	0

NO. OF STACKS NOS	NO. OF Z INCREMENTS NX	NO. OF AXIS SHIFTS NSHIFT	NO. OF CONC. LEVELS SUPPLIED NC	NO. OF RECEPTOR POINTS NR	NO. OF LINE COORDINATES NL
23	0	1	0	1	5

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

STACK DATA					RECEPTOR POINT DATA		
STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION	RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	216.0	26.0	8.3000-03	TOWER A	1	572.0	.0
2	260.0	4.0	1.1600-01	TOWER B,C,D			
3	266.0	-8.0	4.2600-01	TOWER E			
4	136.0	86.0	3.7700-01	TOWER G			
5	132.0	8.0	3.6000-02	TOWER J			
6	142.0	14.0	6.0000-03	TOWER K			
7	152.0	-38.0	3.6000-02	TOWER M			
8	112.0	164.0	6.0000-03	RV 1			
9	120.0	148.0	6.0000-03	RV 2			
10	128.0	130.0	6.0000-03	RV 3			
11	138.0	112.0	6.0000-03	RV 4			
12	146.0	94.0	6.0000-03	RV 5			
13	156.0	76.0	6.0000-03	RV 6			
14	164.0	58.0	6.0000-03	RV 7			
15	172.0	40.0	6.0000-03	RV 8			
16	182.0	22.0	6.0000-03	RV 9			
17	192.0	6.0	6.0000-03	RV 10			
18	200.0	-14.0	6.0000-03	RV 11			
19	210.0	-34.0	6.0000-03	RV 12			
20	218.0	-50.0	6.0000-03	RV 13			
21	226.0	-68.0	6.0000-03	RV 14			
22	236.0	-86.0	6.0000-03	RV 15			
23	244.0	-104.0	6.0000-03	RV 16			

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

STACK DATA (CONT.)

STACK NO.	ACTUAL STACK HEIGHT (FT)	STACK TEMP. (DEG F)	STACK DIAMETER (FT)	VOLUMETRIC FLOW AT 70 DEG F (SCFS)	MOLECULAR WEIGHT OF GAS	HEAT RELEASE OR BUILD HEIGHT	STUMKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	VOLUMETRIC FLOW AT AMB. TEMP. (CU.FT./SEC)	GAS EXIT VELOCITY (FT/SEC)
1	47.50	582.00	1.00	12.50	29.10	300.00	25.00	B-DOWN	12.50	31.29
2	39.00	437.00	1.33	55.10	29.10	300.00	25.00	B-DOWN	55.10	67.12
3	48.50	544.00	2.50	133.30	29.10	300.00	25.00	B-DOWN	133.30	51.44
4	52.00	584.00	2.50	117.80	29.10	300.00	25.00	B-DOWN	117.80	47.27
5	29.80	461.00	1.00	17.20	29.10	300.00	25.00	B-DOWN	17.20	38.06
6	32.80	520.00	1.17	17.20	29.10	300.00	25.00	B-DOWN	17.20	29.58
7	36.80	574.00	1.33	53.80	29.10	300.00	25.00	B-DOWN	53.80	75.55
8	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
9	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
10	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
11	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
12	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
13	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
14	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
15	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
16	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
17	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
18	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
19	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
20	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
21	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
22	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52
23	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

EFFECTIVE STACK HEIGHT DATA

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	144.2	81.0	64.4	57.4	53.8	51.6
2	264.3	118.9	80.9	64.7	56.4	51.4
3	489.5	205.1	130.7	99.0	82.8	73.0
4	475.9	202.3	130.8	100.3	84.7	75,3
5	133.7	65.9	48.2	40.6	36.8	34.4
6	141.8	70.5	51.8	43.8	39.8	37.3
7	306.2	132.8	87.5	68.2	58.3	52.3
8	27.6	.0	.0	.0	.0	.0
9	27.6	.0	.0	.0	.0	.0
10	27.6	.0	.0	.0	.0	.0
11	27.6	.0	.0	.0	.0	.0
12	27.6	.0	.0	.0	.0	.0
13	27.6	.0	.0	.0	.0	.0
14	27.6	.0	.0	.0	.0	.0
15	27.6	.0	.0	.0	.0	.0
16	27.6	.0	.0	.0	.0	.0
17	27.6	.0	.0	.0	.0	.0
18	27.6	.0	.0	.0	.0	.0
19	27.6	.0	.0	.0	.0	.0
20	27.6	.0	.0	.0	.0	.0
21	27.6	.0	.0	.0	.0	.0
22	27.6	.0	.0	.0	.0	.0
23	27.6	.0	.0	.0	.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

MAXIMUM CONCENTRATION DATA

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	1.86-02	1.94-02	1.60-02	1.28-02	1.04-02	8.57-03
2	9.64-02	1.35-01	1.48-01	1.44-01	1.33-01	1.21-01
3	1.37-01	1.91-01	2.28-01	2.44-01	2.43-01	2.34-01
4	1.27-01	1.73-01	2.01-01	2.11-01	2.07-01	1.96-01
5	9.25-02	1.22-01	1.18-01	1.04-01	8.99-02	7.76-02
6	1.38-02	1.80-02	1.72-02	1.51-02	1.30-02	1.12-02
7	2.39-02	3.42-02	3.99-02	4.06-02	3.89-02	3.63-02
8	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
9	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
10	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
11	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
12	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
13	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
14	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
15	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
16	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
17	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
18	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
19	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
20	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
21	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
22	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03
23	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

DISTANCE DOWNWIND OF MAXIMUM CONCENTRATION

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	713.6	420.3	340.8	306.5	288.8	278.1
2	1171.0	597.8	419.7	341.9	301.5	276.9
3	1730.2	1004.8	652.1	505.4	428.9	382.3
4	1670.4	996.6	652.4	511.4	437.9	393.2
5	665.6	347.9	261.0	223.2	203.6	191.8
6	702.9	370.0	279.0	239.4	218.9	206.5
7	1279.9	661.8	451.2	358.8	310.8	281.6
8	156.6	1.0	1.0	1.0	1.0	1.0
9	156.6	1.0	1.0	1.0	1.0	1.0
10	156.6	1.0	1.0	1.0	1.0	1.0
11	156.6	1.0	1.0	1.0	1.0	1.0
12	156.6	1.0	1.0	1.0	1.0	1.0
13	156.6	1.0	1.0	1.0	1.0	1.0
14	156.6	1.0	1.0	1.0	1.0	1.0
15	156.6	1.0	1.0	1.0	1.0	1.0
16	156.6	1.0	1.0	1.0	1.0	1.0
17	156.6	1.0	1.0	1.0	1.0	1.0
18	156.6	1.0	1.0	1.0	1.0	1.0
19	156.6	1.0	1.0	1.0	1.0	1.0
20	156.6	1.0	1.0	1.0	1.0	1.0
21	156.6	1.0	1.0	1.0	1.0	1.0
22	156.6	1.0	1.0	1.0	1.0	1.0
23	156.6	1.0	1.0	1.0	1.0	1.0

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)
8.2	.0	270.0	.0	.0

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	80.97	8.3000-03	TOWER A
2	260.0	4.0	118.88	1.1600-01	TOWER B,C,D
3	266.0	-8.0	205.09	4.2600-01	TOWER E
4	136.0	86.0	202.33	3.7700-01	TOWER G
5	132.0	8.0	65.89	3.6000-02	TOWER J
6	142.0	14.0	70.47	6.0000-03	TOWER K
7	152.0	-38.0	132.83	3.6000-02	TOWER M
8	112.0	164.0	.00	6.0000-03	RV 1
9	120.0	148.0	.00	6.0000-03	RV 2
10	128.0	130.0	.00	6.0000-03	RV 3
11	138.0	112.0	.00	6.0030-03	RV 4
12	146.0	94.0	.00	6.0000-03	RV 5
13	156.0	76.0	.00	6.0000-03	RV 6
14	164.0	58.0	.00	6.0000-03	RV 7
15	172.0	40.0	.00	6.0000-03	RV 8
16	182.0	22.0	.00	6.0000-03	RV 9
17	192.0	6.0	.00	6.0030-03	RV 10
18	200.0	-14.0	.00	6.0000-03	RV 11
19	210.0	-34.0	.00	6.0000-03	RV 12
20	218.0	-50.0	.00	6.0000-03	RV 13
21	226.0	-68.0	.00	6.0000-03	RV 14
22	236.0	-86.0	.00	6.0000-03	RV 15
23	244.0	-104.0	.00	6.0000-03	RV 16

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

MAXIMUM CONCENTRATION DATA

STACK NO.	CONTRIBUTION TO MAXIMUM CONCENTRATION	RELATIVE CONTRIBUTION	STACK IDENTIFICATION
1	.0000	.00000	TOWER A
2	.0000	.00000	TOWER B,C,D
3	.0000	.00000	TOWER E
4	.0000	.00000	TOWER G
5	1.0202-13	.00000	TOWER J
6	5.2969-23	.00000	TOWER K
7	.0000	.00000	TOWER M
8	1.9964-08	.00000	RV 1
9	4.4453-08	.00000	RV 2
10	1.7608-07	.00000	RV 3
11	3.8743-07	.00000	RV 4
12	2.2999-06	.00000	RV 5
13	7.7134-06	.00000	RV 6
14	9.9341-05	.00001	RV 7
15	2.5447-03	.00015	RV 8
16	8.8926-02	.00530	RV 9
17	1.6691+01	.99454	RV 10
18	.0000	.00000	RV 11
19	.0000	.00000	RV 12
20	.0000	.00000	RV 13
21	.0000	.00000	RV 14
22	.0000	.00000	RV 15
23	.0000	.00000	RV 16

DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	MAXIMUM CONCENTRATION	STABILITY	windspeed
200.00	.00	1.6782+01	A	8.2 fps

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	STABILITY
8.2	.0	270.0	1

RECEPTOR POINT DATA

STACK NO.	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION
	RECEPTOR PT. 1							
1	1.747-02	.02511						
2	2.852-02	.04099						
3	4.366-05	.00006						
4	8.192-03	.01177						
5	1.102-01	.15840						
6	1.713-02	.02462						
7	1.704-02	.02449						
8	1.158-02	.01665						
9	1.389-02	.01996						
10	1.684-02	.02420						
11	2.026-02	.02912						
12	2.392-02	.03438						
13	2.799-02	.04024						
14	3.195-02	.04592						
15	3.572-02	.05134						
16	3.940-02	.05663						
17	4.234-02	.06085						
18	4.381-02	.06296						
19	4.395-02	.06316						
20	4.259-02	.06121						
21	3.927-02	.05645						
22	3.477-02	.04997						
23	2.889-02	.04152						
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TOTAL	6.958-01	1.00000						

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

class A stability
8.2 f/s

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	16.782	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	2.382	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	1.256	.002	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	.843	.007	.000	.000	.000	.000
600	.000	.000	.000	.000	.002	.665	.017	.000	.000	.000	.000
700	.000	.000	.000	.000	.009	.622	.031	.000	.000	.000	.000
800	.000	.000	.000	.000	.023	.629	.056	.000	.000	.000	.000
900	.000	.000	.000	.000	.045	.646	.089	.000	.000	.000	.000
1000	.000	.000	.000	.000	.073	.646	.125	.001	.000	.000	.000
1100	.000	.000	.000	.001	.104	.628	.159	.003	.000	.000	.000
1200	.000	.000	.000	.002	.131	.592	.185	.005	.000	.000	.000
1300	.000	.000	.000	.004	.151	.543	.201	.009	.000	.000	.000
1400	.000	.000	.000	.007	.162	.485	.205	.014	.000	.000	.000
1500	.000	.000	.000	.011	.164	.428	.202	.019	.000	.000	.000
1600	.000	.000	.000	.015	.162	.375	.194	.024	.001	.000	.000
1700	.000	.000	.001	.019	.156	.328	.183	.028	.001	.000	.000
1800	.000	.000	.001	.023	.148	.287	.170	.032	.002	.000	.000
1900	.000	.000	.002	.026	.138	.250	.157	.035	.003	.000	.000
2000	.000	.000	.002	.028	.127	.218	.142	.036	.004	.000	.000
2100	.000	.000	.003	.029	.115	.188	.128	.037	.005	.000	.000
2200	.000	.000	.004	.030	.105	.164	.115	.037	.006	.000	.000
2300	.000	.000	.005	.030	.095	.143	.104	.036	.006	.001	.000
2400	.000	.000	.005	.030	.086	.125	.093	.036	.007	.001	.000
2500	.000	.001	.006	.029	.078	.111	.084	.035	.008	.001	.000
2600	.000	.001	.006	.029	.071	.098	.076	.033	.008	.001	.000
2700	.000	.001	.007	.028	.064	.087	.069	.032	.009	.001	.000
2800	.000	.001	.007	.027	.059	.078	.062	.030	.009	.002	.000
2900	.000	.001	.008	.026	.053	.070	.057	.029	.009	.002	.000
3000	.000	.002	.008	.025	.049	.063	.052	.028	.010	.002	.000
3100	.000	.002	.008	.023	.045	.056	.047	.026	.010	.002	.000
3200	.000	.002	.008	.022	.041	.051	.043	.025	.010	.003	.000
3300	.000	.002	.008	.021	.038	.046	.040	.023	.010	.003	.001
3400	.000	.002	.008	.020	.035	.042	.036	.022	.010	.003	.001
3500	.001	.003	.008	.019	.032	.039	.033	.021	.009	.003	.001
3600	.001	.003	.008	.018	.030	.035	.031	.020	.009	.003	.001
3700	.001	.003	.008	.017	.027	.032	.028	.019	.009	.003	.001
3800	.001	.003	.008	.016	.025	.030	.026	.018	.009	.003	.001
3900	.001	.003	.008	.016	.024	.027	.024	.017	.009	.003	.001
4000	.001	.003	.008	.015	.022	.025	.023	.016	.008	.004	.001

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

MAX DOWNWIND CONC. UNDER ALL METEOROLOGICAL CONDITIONS

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1500. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	16.782	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	7.219	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	5.713	.003	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	4.451	.018	.000	.000	.000	.000
600	.000	.000	.000	.000	.003	3.599	.039	.000	.000	.000	.000
700	.000	.000	.000	.000	.015	3.040	.060	.000	.000	.000	.000
800	.000	.000	.000	.000	.034	2.649	.079	.000	.000	.000	.000
900	.000	.000	.000	.000	.055	2.358	.096	.000	.000	.000	.000
1000	.000	.000	.000	.000	.075	2.132	.125	.001	.000	.000	.000
1100	.000	.000	.000	.001	.104	1.952	.159	.003	.000	.000	.000
1200	.000	.000	.000	.002	.131	1.805	.185	.005	.000	.000	.000
1300	.000	.000	.000	.004	.151	1.683	.201	.009	.000	.000	.000
1400	.000	.000	.000	.008	.162	1.580	.205	.014	.000	.000	.000
1500	.000	.000	.000	.013	.184	1.493	.223	.022	.000	.000	.000
1600	.000	.000	.000	.020	.207	1.417	.247	.032	.001	.000	.000
1700	.000	.000	.001	.029	.225	1.351	.264	.042	.002	.000	.000
1800	.000	.000	.002	.037	.237	1.292	.273	.052	.003	.000	.000
1900	.000	.000	.003	.046	.242	1.240	.275	.062	.005	.000	.000
2000	.000	.000	.005	.054	.241	1.194	.271	.070	.007	.000	.000
2100	.000	.000	.006	.060	.235	1.168	.261	.076	.010	.001	.000
2200	.000	.000	.008	.064	.225	1.173	.248	.080	.012	.001	.000
2300	.000	.001	.010	.068	.213	1.174	.233	.082	.014	.001	.000
2400	.000	.001	.012	.069	.200	1.171	.222	.083	.017	.002	.000
2500	.000	.002	.014	.070	.201	1.165	.228	.082	.018	.002	.000
2600	.000	.002	.016	.070	.209	1.156	.236	.081	.020	.003	.000
2700	.000	.003	.017	.069	.217	1.145	.243	.079	.022	.004	.000
2800	.000	.003	.019	.067	.223	1.131	.248	.077	.023	.004	.000
2900	.000	.004	.020	.065	.228	1.116	.252	.074	.024	.005	.001
3000	.001	.004	.020	.064	.232	1.100	.255	.079	.024	.006	.001
3100	.001	.005	.021	.070	.235	1.083	.257	.085	.025	.006	.001
3200	.001	.005	.021	.076	.237	1.065	.258	.091	.025	.007	.001
3300	.001	.006	.022	.081	.238	1.046	.258	.097	.025	.007	.001
3400	.001	.005	.022	.086	.238	1.029	.257	.102	.025	.008	.002
3500	.002	.007	.022	.091	.237	1.026	.256	.106	.025	.008	.002
3600	.002	.007	.022	.095	.236	1.023	.253	.110	.027	.009	.002
3700	.002	.008	.024	.099	.234	1.018	.251	.114	.030	.009	.002

3900	.002	.008	.029	.105	.229	1.007	.244	.120	.036	.009	.003
4000	.003	.008	.032	.107	.226	1.000	.240	.122	.039	.010	.003

CHEM-FAB ODOR MODELING
COMPOSITE OF ALL STACKS PLUS RIDGEVENT

METEOROLOGICAL CONDITIONS CORRESPONDING TO MAX DOWNWIND CONC.

STABILITY - WIND SPEED

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0
100	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0
200	0- .0	0- .0	0- .0	0- .0	0- .0	1- 8.2	1- 8.2	0- .0	0- .0	0- .0	0- .0
300	0- .0	0- .0	0- .0	0- .0	1- 8.2	6- 8.2	1- 3.0	1- 3.0	0- .0	0- .0	0- .0
400	0- .0	0- .0	0- .0	1- 8.2	1- 8.2	6- 8.2	1- 3.0	1- 3.0	1- 3.0	0- .0	0- .0
500	0- .0	0- .0	1- 8.2	1- 8.2	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	0- .0	0- .0
600	0- .0	1- 8.2	1- 8.2	1- 8.2	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	0- .0
700	0- .0	1- 8.2	1- 8.2	1- 8.2	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
800	1- 3.0	1- 8.2	1- 8.2	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
900	1- 3.0	1- 8.2	1- 8.2	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1000	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1100	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 8.2	6- 8.2	1- 8.2	1- 8.2	1- 3.0	1- 3.0	1- 3.0
1200	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 8.2	6- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 3.0	1- 3.0
1300	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 8.2	6- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 3.0	1- 3.0
1400	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 8.2	6- 8.2	1- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1500	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1600	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1700	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1800	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1900	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2000	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	6- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2100	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2200	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2300	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2400	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2500	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2600	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2700	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2800	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2900	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
3000	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3100	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3200	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3300	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3400	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3500	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3600	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0

3700	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
3800	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
3900	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
4000	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5- 8.2	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT Case 4) unstable

MISC. DATA

WIND SPEED (FT/SEC)	INITIAL WIND DIRECTION (DEG)	ACTUAL WIND DIRECTION (DEG)	DISPERSION EQUATION IEQUA	STABILITY CLASS ICLASS	AMBIENT TEMPERATURE (DEG F)	TIME ADJUSTMENT FACTOR	INVERSION LAYER ELEV(FT)
999.00	270.0	.0	GIFFORD	B	70.0	1.0000	.000

MIN. DOWNWIND DISTANCE (FT)	MAX. DOWNWIND DISTANCE (FT)	MIN. CROSSWIND DISTANCE (FT)	MAX. CROSSWIND DISTANCE (FT)	NO. OF DOWNWIND INCREMENTS NX	NO. OF CROSSWIND INCREMENTS NY	PLOTTED OUTPUT DESIRED NPLOT	STACK LOCATIONS PLOTTED? NLOC
.0	4000.0	-2000.0	2000.0	41	11	3	0

NO. OF STACKS NOS	NO. OF Z INCREMENTS NX	NO. OF AXIS SHIFTS NSHIFT	NO. OF CONC. LEVELS SUPPLIED NC	NO. OF RECEPTOR POINTS NR	NO. OF LINE COORDINATES NL
8	0	0	4	1	5

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

STACK DATA					RECEPTOR POINT DATA		
STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION	RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	216.0	26.0	8.3000-03	TOWER A	1	572.0	.0
2	260.0	4.0	1.1600-01	TOWER B,C,D (REDUCED TIP)			
3	266.0	-8.0	4.2600-01	TOWER E (REDUCED TIP)			
4	136.0	86.0	3.7700-01	TOWER G (REDUCED TIP)			
5	132.0	8.0	3.6000-02	TOWER J (RAISED 20 FT)			
6	142.0	14.0	6.0000-03	TOWER K			
7	152.0	-38.0	3.6000-02	TOWER M			
8	244.0	-104.0	9.5000-02	DUCTED RIDGEVENT			

COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

STACK DATA (CONT.)

STACK NO.	ACTUAL STACK HEIGHT (FT)	STACK TEMP. (DEG F)	STACK DIAMETER (FT)	VOLUMETRIC FLOW AT 70 DEG F (SCFS)	MOLECULAR WEIGHT OF GAS	HEAT RELEASE OR BUILD HEIGHT	STUMKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	VOLUMETRIC FLOW AT AMB. TEMP. (CU.FT./SEC)	GAS EXIT VELOCITY (FT/SEC)
1	47.50	582.00	1.00	12.50	29.10	300.00	25.00	B-DOWN	12.50	31.29
2	39.00	437.00	1.00	55.10	29.10	300.00	25.00	B-DOWN	55.10	118.73
3	48.50	544.00	2.00	133.30	29.10	300.00	25.00	B-DOWN	133.30	80.38
4	52.00	584.00	2.00	117.80	29.10	300.00	25.00	B-DOWN	117.80	73.86
5	50.00	461.00	1.00	17.20	29.10	300.00	25.00	B-DOWN	17.20	38.36
6	32.80	520.00	1.17	17.20	29.10	300.00	25.00	B-DOWN	17.20	29.58
7	36.80	574.00	1.33	53.80	29.10	300.00	25.00	B-DOWN	53.80	75.55
8	50.00	124.00	2.00	143.30	29.10	300.00	25.00	B-DOWN	143.30	50.26

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

EFFECTIVE STACK HEIGHT DATA

STACK NO.	15.0 FPS
1	64.4
2	85.8
3	136.5
4	136.2
5	68.4
6	51.8
7	87.5
8	75.3

MAXIMUM CONCENTRATION DATA

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	15.0 FPS
1	1.80-02
2	1.44-01
3	2.13-01
4	1.89-01
5	6.96-02
6	2.00-02
7	4.29-02
8	1.52-01

DISTANCE DOWNWIND OF MAXIMUM CONCENTRATION

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	15.0 FPS
1	430.1
2	581.2
3	947.7
4	945.7
5	457.8
6	341.8
7	573.4
8	506.7

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)
15.0	.0	270.0	.0	.0

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	215.0	26.0	64.44	8.3000-03	TOWER A
2	260.0	4.0	85.78	1.1600-01	TOWER B,C,D (REDUCED TIP)
3	266.0	-8.0	136.49	4.2600-01	TOWER E (REDUCED TIP)
4	136.0	86.0	136.22	3.7700-01	TOWER G (REDUCED TIP)
5	132.0	8.0	68.37	3.6000-02	TOWER J (RAISED 20 FT)
6	142.0	14.0	51.80	6.0000-03	TOWER K
7	152.0	-38.0	87.49	3.6000-02	TOWER M
8	244.0	-104.0	75.30	9.5000-02	DUCTED RIDGEVENT

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)
15.0	.0	270.0	.0	.0

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	64.44	8.3000-03	TOWER A
2	260.0	4.0	85.78	1.1600-01	TOWER B,C,D (REDUCED TIP)
3	266.0	-8.0	136.49	4.2600-01	TOWER E (REDUCED TIP)
4	136.0	86.0	136.22	3.7700-01	TOWER G (REDUCED TIP)
5	132.0	8.0	68.37	3.6000-02	TOWER J (RAISED 20 FT)
6	142.0	14.0	51.80	6.0000-03	TOWER K
7	152.0	-38.0	87.49	3.6000-02	TOWER M
8	244.0	-104.0	75.30	9.5000-02	DUCTED RIDGEVENT

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

[illegible]
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)
15.0	.0	270.0	.0	.0

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	64.44	8.3000-03	TOWER A
2	260.0	4.0	85.78	1.1600-01	TOWER B,C,D (REDUCED TIP)
3	266.0	-8.0	136.49	4.2600-01	TOWER E (REDUCED TIP)
4	136.0	86.0	136.22	3.7700-01	TOWER G (REDUCED TIP)
5	132.0	8.0	68.37	3.6000-02	TOWER J (RAISED 20 FT)
6	142.0	14.0	51.80	6.0000-03	TOWER K
7	152.0	-38.0	87.49	3.6000-02	TOWER M
8	244.0	-104.0	75.30	9.5000-02	DUCTED RIDGEVENT

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

MAXIMUM CONCENTRATION DATA

STACK NO.	CONTRIBUTION TO MAXIMUM CONCENTRATION	RELATIVE CONTRIBUTION	STACK IDENTIFICATION
1	1.1279-02	.01707	TOWER A
2	1.3153-01	.19910	TOWER B,C,D (REDUCED TIP)
3	1.8525-01	.28040	TOWER E (REDUCED TIP)
4	1.5809-01	.23929	TOWER G (REDUCED TIP)
5	4.2095-02	.06372	TOWER J (RAISED 20 FT)
6	8.0580-03	.01220	TOWER K
7	3.4645-02	.05244	TOWER M
8	8.9705-02	.13578	DUCTED RIDGEVENT

DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	MAXIMUM CONCENTRATION	STABILITY	WIND SPEED
1000.00	.00	6.6065-01	B	15.0 fps

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	STABILITY
15.0	.0	270.0	2

RECEPTOR POINT DATA

STACK NO.	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION
	RECEPTOR PT. 1							
1	1.556-02	.06948						
2	4.991-02	.22277						
3	1.047-03	.00467						
4	1.696-02	.07571						
5	6.907-02	.30829						
6	1.814-02	.08096						
7	2.924-02	.13051						
8	2.411-02	.10761						
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TOTAL	2.240-01	1.00000						

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT class 2 15.0 fps

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1500. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	.005	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	.053	.000	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	.129	.000	.000	.000	.000	.000
600	.000	.000	.000	.000	.000	.268	.000	.000	.000	.000	.000
700	.000	.000	.000	.000	.000	.426	.001	.000	.000	.000	.000
800	.000	.000	.000	.000	.003	.553	.005	.000	.000	.000	.000
900	.000	.000	.000	.000	.008	.630	.013	.000	.000	.000	.000
1000	.000	.000	.000	.000	.018	.661	.026	.000	.000	.000	.000
1100	.000	.000	.000	.000	.031	.657	.043	.000	.000	.000	.000
1200	.000	.000	.000	.000	.047	.633	.063	.000	.000	.000	.000
1300	.000	.000	.000	.000	.064	.598	.082	.000	.000	.000	.000
1400	.000	.000	.000	.000	.080	.558	.099	.001	.000	.000	.000
1500	.000	.000	.000	.001	.095	.517	.115	.001	.000	.000	.000
1600	.000	.000	.000	.001	.107	.478	.127	.003	.000	.000	.000
1700	.000	.000	.000	.002	.117	.441	.136	.004	.000	.000	.000
1800	.000	.000	.000	.004	.124	.405	.142	.006	.000	.000	.000
1900	.000	.000	.000	.006	.128	.373	.145	.008	.000	.000	.000
2000	.000	.000	.000	.008	.131	.343	.146	.011	.000	.000	.000
2100	.000	.000	.000	.010	.131	.316	.145	.014	.000	.000	.000
2200	.000	.000	.000	.013	.130	.291	.143	.016	.000	.000	.000
2300	.000	.000	.000	.015	.129	.269	.141	.019	.001	.000	.000
2400	.000	.000	.001	.018	.126	.249	.137	.022	.001	.000	.000
2500	.000	.000	.001	.020	.123	.231	.133	.024	.001	.000	.000
2600	.000	.000	.001	.022	.120	.214	.129	.027	.002	.000	.000
2700	.000	.000	.002	.024	.116	.199	.124	.029	.002	.000	.000
2800	.000	.000	.002	.026	.112	.185	.120	.030	.003	.000	.000
2900	.000	.000	.003	.028	.109	.174	.115	.032	.004	.000	.000
3000	.000	.000	.004	.029	.105	.163	.111	.033	.004	.000	.000
3100	.000	.000	.004	.031	.101	.153	.106	.034	.005	.000	.000
3200	.000	.000	.005	.032	.097	.143	.102	.035	.006	.001	.000
3300	.000	.000	.006	.032	.093	.135	.098	.036	.007	.001	.000
3400	.000	.001	.006	.033	.090	.127	.094	.037	.008	.001	.000
3500	.000	.001	.007	.034	.086	.120	.090	.037	.008	.001	.000
3600	.000	.001	.008	.034	.083	.114	.087	.037	.009	.001	.000
3700	.000	.001	.008	.034	.080	.107	.083	.037	.010	.001	.000
3800	.000	.001	.009	.034	.077	.102	.080	.037	.010	.002	.000
3900	.000	.002	.010	.034	.074	.097	.077	.037	.011	.002	.000
4000	.000	.002	.010	.034	.071	.092	.074	.037	.011	.002	.000

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

Case 4) stable

MISC. DATA

WIND SPEED (FT/SEC)	INITIAL WIND DIRECTION (DEG)	ACTUAL WIND DIRECTION (DEG)	DISPERSION EQUATION IEQUA	STABILITY CLASS ICLASS	AMBIENT TEMPERATURE (DEG F)	TIME ADJUSTMENT FACTOR	INVERSION LAYER ELEV(FT)
15.00	270.0	.0	GIFFORD	E	70.0	1.0000	.000

MIN. DOWNWIND DISTANCE (FT)	MAX. DOWNWIND DISTANCE (FT)	MIN. CROSSWIND DISTANCE (FT)	MAX. CROSSWIND DISTANCE (FT)	NO. OF DOWNWIND INCREMENTS NX	NO. OF CROSSWIND INCREMENTS NY	PLOTTED OUTPUT DESIRED NPLOT	STACK LOCATIONS PLOTTED? NLOC
.0	4000.0	-2000.0	2000.0	41	11	3	0

NO. OF STACKS NOS	NO. OF Z INCREMENTS NX	NO. OF AXIS SHIFTS NSHIFT	NO. OF CONC. LEVELS SUPPLIED NC	NO. OF RECEPTOR POINTS NR	NO. OF LINE COORDINATES NL
8	0	1	4	1	5

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	8.3000-03	TOWER A
2	260.0	4.0	1.1600-01	TOWER B,C,D (REDUCED TIP)
3	266.0	-8.0	4.2600-01	TOWER E (REDUCED TIP)
4	136.0	86.0	3.7700-01	TOWER G (REDUCED TIP)
5	132.0	8.0	3.6000-02	TOWER J (RAISED 20 FT)
6	142.0	14.0	6.0000-03	TOWER K
7	152.0	-38.0	3.6000-02	TOWER M
8	294.0	-104.0	9.5000-02	DUCTED RIDGEVENT

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	8.3000-03	TOWER A
2	260.0	4.0	1.1600-01	TOWER B,C,D (REDUCED TIP)
3	266.0	-8.0	4.2600-01	TOWER E (REDUCED TIP)
4	136.0	86.0	3.7700-01	TOWER G (REDUCED TIP)
5	132.0	8.0	3.6000-02	TOWER J (RAISED 20 FT)
6	192.0	14.0	6.0000-03	TOWER K
7	152.0	-38.0	3.6000-02	TOWER M
8	294.0	-104.0	9.5000-02	DUCTED RIDGEVENT

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

STACK DATA (CONT.)

STACK NO.	ACTUAL STACK HEIGHT (FT)	STACK TEMP. (DEG F)	STACK DIAMETER (FT)	VOLUMETRIC FLOW AT 70 DEG F (SCFS)	MOLECULAR WEIGHT OF GAS	HEAT RELEASE OR BUILD HEIGHT	STUHKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	VOLUMETRIC FLOW AT AMB. TEMP. (CU.FT./SEC)	GAS EXIT VELOCITY (FT/SEC)
1	47.50	582.00	1.00	12.50	29.10	300.00	25.00	B-DOWN	12.50	31.29
2	39.00	437.00	1.00	55.10	29.10	300.00	25.00	B-DOWN	55.10	118.73
3	48.50	544.00	2.00	133.30	29.10	300.00	25.00	B-DOWN	133.30	80.38
4	52.00	584.00	2.00	117.80	29.10	300.00	25.00	B-DOWN	117.80	73.86
5	50.00	461.00	1.00	17.20	29.10	300.00	25.00	B-DOWN	17.20	38.06
6	32.80	520.00	1.17	17.20	29.10	300.00	25.00	B-DOWN	17.20	29.58
7	36.80	574.00	1.33	53.80	29.10	300.00	25.00	B-DOWN	53.80	75.55
8	50.00	124.00	2.00	143.30	29.10	300.00	25.00	B-DOWN	143.30	50.26

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

EFFECTIVE STACK HEIGHT DATA

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	135.1	77.6	62.6	56.2	52.9	51.0
2	217.5	1C2.4	72.3	59.5	52.9	49.0
3	299.2	136.4	93.8	75.7	66.4	60.8
4	291.9	136.0	95.2	77.8	68.9	63.6
5	143.2	82.2	66.2	59.4	56.0	53.9
6	126.6	64.9	48.8	41.9	38.4	36.2
7	212.6	98.6	68.8	56.1	49.6	45.7
8	185.3	95.7	72.3	62.3	57.2	54.1

MAXIMUM CONCENTRATION DATA

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	1.29-02	1.72-02	1.56-02	1.30-02	1.07-02	9.00-03
2	5.90-02	1.26-01	1.55-01	1.59-01	1.50-01	1.38-01
3	9.89-02	2.36-01	3.10-01	3.31-01	3.24-01	3.05-01
4	9.40-02	2.11-01	2.65-01	2.75-01	2.63-01	2.44-01
5	4.87-02	6.53-02	5.91-02	4.93-02	4.09-02	3.43-02
6	1.08-02	1.89-02	2.02-02	1.84-02	1.60-02	1.38-02
7	1.93-02	4.27-02	5.42-02	5.65-02	5.43-02	5.05-02
8	7.03-02	1.21-01	1.27-01	1.17-01	1.03-01	8.96-02

DISTANCE DOWNWIND OF MAXIMUM CONCENTRATION

INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK NO.	3.0 FPS	8.2 FPS	15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS
1	4947.1	2207.8	1614.0	1379.3	1263.9	1196.0
2	9899.6	3304.0	1989.9	1497.1	1262.7	1127.9
3	13200.0	5019.2	2910.2	2127.9	1758.8	1547.7
4	13200.0	4595.1	2971.0	2214.6	1855.8	1649.9
5	5389.1	2399.9	1752.3	1496.4	1370.5	1296.5
6	4503.4	1700.7	1121.2	978.3	881.2	823.6
7	9579.5	3127.0	1850.2	1373.8	1148.1	1018.6
8	7840.1	2993.9	1988.5	1601.1	1413.4	1304.2

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)
15.0	.0	270.0	.0	.0

STACK DATA

STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION
1	216.0	26.0	62.62	8.3000-03	TOWER A
2	260.0	4.0	72.29	1.1600-01	TOWER B,C,D (REDUCED TIP)
3	266.0	-8.0	93.85	4.2600-01	TOWER E (REDUCED TIP)
4	136.0	86.0	95.19	3.7700-01	TOWER G (REDUCED TIP)
5	132.0	8.0	66.25	3.6000-02	TOWER J (RAISED 20 FT)
6	142.0	14.0	48.76	6.0000-03	TOWER K
7	152.0	-38.0	68.77	3.6000-02	TOWER M
8	244.0	-104.0	72.26	9.5000-02	DUCTED RIDGEVENT

RECEPTOR POINT DATA

RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	572.0	.0

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

MAXIMUM CONCENTRATION DATA

STACK NO.	CONTRIBUTION TO MAXIMUM CONCENTRATION	RELATIVE CONTRIBUTION	STACK IDENTIFICATION
1	1.2156-02	.01393	TOWER A
2	1.4369-01	.16462	TOWER B,C,D (REDUCED TIP)
3	3.0575-01	.35029	TOWER E (REDUCED TIP)
4	2.1878-01	.25064	TOWER G (REDUCED TIP)
5	4.8884-02	.05600	TOWER J (RAISED 20 FT)
6	1.0856-02	.01244	TOWER K
7	4.5183-02	.05177	TOWER M
8	8.7556-02	.10031	DUCTED RIDGEVENT

DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	MAXIMUM CONCENTRATION	STABILITY	Windspeed
2900.00	.00	8.7285-01	E	15.0 fps

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

WIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	STABILITY
15.0	.0	270.0	5

RECEPTOR POINT DATA

STACK NO.	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION	EFFECTIVE STACK CONTRIBUTION	RELATIVE STACK CONTRIBUTION
	RECEPTOR PT. 1							
1	8.794-07	.00078						
2	6.515-09	.00001						
3	3.243-15	.00000						
4	5.825-11	.00000						
5	8.314-05	.07337						
6	1.043-03	.92089						
7	5.616-06	.00496						
8	2.929-14	.00000						
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TOTAL	1.133-03	1.00000						

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

Class = 5 wind = 15.0 fps

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
600	.000	.000	.000	.000	.000	.002	.000	.000	.000	.000	.000
700	.000	.000	.000	.000	.000	.008	.000	.000	.000	.000	.000
800	.000	.000	.000	.000	.000	.020	.000	.000	.000	.000	.000
900	.000	.000	.000	.000	.000	.043	.000	.000	.000	.000	.000
1000	.000	.000	.000	.000	.000	.080	.000	.000	.000	.000	.000
1100	.000	.000	.000	.000	.000	.133	.000	.000	.000	.000	.000
1200	.000	.000	.000	.000	.000	.199	.000	.000	.000	.000	.000
1300	.000	.000	.000	.000	.000	.270	.000	.000	.000	.000	.000
1400	.000	.000	.000	.000	.000	.340	.000	.000	.000	.000	.000
1500	.000	.000	.000	.000	.000	.410	.000	.000	.000	.000	.000
1600	.000	.000	.000	.000	.000	.479	.000	.000	.000	.000	.000
1700	.000	.000	.000	.000	.000	.544	.000	.000	.000	.000	.000
1800	.000	.000	.000	.000	.000	.603	.000	.000	.000	.000	.000
1900	.000	.000	.000	.000	.000	.656	.001	.000	.000	.000	.000
2000	.000	.000	.000	.000	.001	.703	.001	.000	.000	.000	.000
2100	.000	.000	.000	.000	.001	.743	.002	.000	.000	.000	.000
2200	.000	.000	.000	.000	.002	.777	.003	.000	.000	.000	.000
2300	.000	.000	.000	.000	.004	.804	.005	.000	.000	.000	.000
2400	.000	.000	.000	.000	.005	.827	.008	.000	.000	.000	.000
2500	.000	.000	.000	.000	.007	.844	.011	.000	.000	.000	.000
2600	.000	.000	.000	.000	.010	.856	.014	.000	.000	.000	.000
2700	.000	.000	.000	.000	.013	.865	.019	.000	.000	.000	.000
2800	.000	.000	.000	.000	.016	.871	.023	.000	.000	.000	.000
2900	.000	.000	.000	.000	.020	.873	.029	.000	.000	.000	.000
3000	.000	.000	.000	.000	.025	.873	.035	.000	.000	.000	.000
3100	.000	.000	.000	.000	.030	.870	.042	.000	.000	.000	.000
3200	.000	.000	.000	.000	.035	.866	.049	.000	.000	.000	.000
3300	.000	.000	.000	.000	.041	.860	.056	.000	.000	.000	.000
3400	.000	.000	.000	.000	.047	.852	.064	.000	.000	.000	.000
3500	.000	.000	.000	.000	.054	.844	.072	.000	.000	.000	.000
3600	.000	.000	.000	.000	.060	.834	.081	.000	.000	.000	.000
3700	.000	.000	.000	.000	.067	.824	.089	.000	.000	.000	.000
3800	.000	.000	.000	.000	.074	.813	.097	.000	.000	.000	.000
3900	.000	.000	.000	.000	.081	.802	.106	.000	.000	.000	.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.088	.790	.114	.000	.000	.000	.000

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

MAX DOWNWIND CONC. UNDER ALL METEOROLOGICAL CONDITIONS

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
300	.000	.000	.000	.000	.000	.005	.000	.000	.000	.000	.000
400	.000	.000	.000	.000	.000	.053	.000	.000	.000	.000	.000
500	.000	.000	.000	.000	.000	.129	.000	.000	.000	.000	.000
600	.000	.000	.000	.000	.001	.268	.001	.000	.000	.000	.000
700	.000	.000	.000	.000	.010	.426	.007	.000	.000	.000	.000
800	.000	.000	.000	.000	.028	.553	.025	.000	.000	.000	.000
900	.000	.000	.000	.000	.053	.630	.053	.000	.000	.000	.000
1000	.000	.000	.000	.000	.082	.661	.087	.001	.000	.000	.000
1100	.000	.000	.000	.001	.113	.657	.124	.002	.000	.000	.000
1200	.000	.000	.000	.002	.140	.673	.155	.004	.000	.000	.000
1300	.000	.000	.000	.005	.159	.668	.176	.008	.000	.000	.000
1400	.000	.000	.000	.009	.169	.650	.185	.012	.000	.000	.000
1500	.000	.000	.000	.015	.180	.652	.186	.017	.000	.000	.000
1600	.000	.000	.001	.022	.204	.647	.200	.023	.001	.000	.000
1700	.000	.000	.001	.030	.222	.634	.223	.033	.001	.000	.000
1800	.000	.000	.002	.039	.234	.616	.239	.043	.003	.000	.000
1900	.000	.000	.003	.048	.240	.656	.247	.053	.004	.000	.000
2000	.000	.000	.005	.056	.240	.703	.249	.061	.006	.000	.000
2100	.000	.000	.007	.062	.235	.743	.244	.068	.008	.000	.000
2200	.000	.001	.009	.067	.226	.777	.234	.073	.011	.001	.000
2300	.000	.001	.011	.070	.214	.804	.222	.076	.013	.001	.000
2400	.000	.001	.013	.071	.201	.827	.208	.078	.015	.002	.000
2500	.000	.002	.015	.072	.190	.844	.203	.078	.017	.002	.000
2600	.000	.002	.016	.072	.195	.856	.199	.077	.019	.003	.000
2700	.000	.003	.018	.071	.202	.865	.195	.076	.020	.003	.000
2800	.000	.003	.019	.069	.209	.871	.204	.074	.022	.004	.000
2900	.000	.004	.020	.067	.214	.873	.211	.071	.023	.005	.001
3000	.001	.004	.021	.065	.218	.873	.217	.069	.023	.005	.001
3100	.001	.005	.022	.069	.222	.870	.221	.070	.024	.006	.001
3200	.001	.006	.022	.075	.224	.866	.225	.076	.024	.006	.001
3300	.001	.006	.022	.080	.226	.860	.227	.082	.024	.007	.001
3400	.001	.007	.023	.085	.226	.852	.229	.087	.024	.007	.002
3500	.002	.007	.023	.090	.226	.844	.229	.092	.024	.008	.002
3600	.002	.007	.022	.094	.226	.839	.229	.097	.024	.008	.002
3700	.002	.008	.024	.097	.225	.824	.228	.101	.026	.009	.002
3800	.002	.008	.027	.101	.223	.813	.227	.104	.029	.009	.003

CHEM-FAB ODOR MODELING
COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

METEOROLOGICAL CONDITIONS CORRESPONDING TO MAX DOWNWIND CONC.

STABILITY - WIND SPEED

CWD 1 = -2000. CWD 2 = -1600. CWD 3 = -1200. CWD 4 = -800. CWD 5 = -400. CWD 6 = 0. CWD 7 = 400.
CWD 8 = 800. CWD 9 = 1200. CWD 10 = 1600. CWD 11 = 2000.

DIST	CWD 1	CWD 2	CWD 3	CWD 4	CWD 5	CWD 6	CWD 7	CWD 8	CWD 9	CWD 10	CWD 11
0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0
100	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0	0- .0
200	0- .0	0- .0	0- .0	0- .0	0- .0	2-15.0	0- .0	0- .0	0- .0	0- .0	0- .0
300	0- .0	0- .0	0- .0	0- .0	1- 8.2	2-15.0	1- 8.2	0- .0	0- .0	0- .0	0- .0
400	0- .0	0- .0	0- .0	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	0- .0	0- .0	0- .0
500	0- .0	0- .0	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	0- .0	0- .0
600	0- .0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	0- .0	0- .0
700	0- .0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	0- .0
800	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	0- .0
900	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1000	1- 3.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	2-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1100	1- 3.0	1- 3.0	1- 8.2	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1200	1- 3.0	1- 3.0	1- 3.0	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1300	1- 3.0	1- 3.0	1- 3.0	1- 8.2	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1400	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 8.2	3-23.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1500	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	3-15.0	1- 8.2	1- 8.2	1- 8.2	1- 8.2	1- 8.2
1600	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	3-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1700	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	3-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1800	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	4-23.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
1900	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2000	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2100	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2200	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2300	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2400	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	5-15.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2500	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 8.2	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2600	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2700	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 8.2	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2800	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
2900	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
3000	1- 3.0	1- 3.0	1- 3.0	1- 3.0	2- 3.0	5-15.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0	1- 3.0
3100	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3200	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3300	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3400	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
3500	1- 3.0	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0
[illegible]	[illegible]	1- 3.0	1- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0	1- 3.0

3700	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
3800	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
3900	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0
4000	1- 3.0	1- 3.0	2- 3.0	2- 3.0	2- 3.0	5-15.0	2- 3.0	2- 3.0	2- 3.0	1- 3.0	1- 3.0